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Encyclopædia

DIRECTIONS TO THE BINDER
OF THE
ENCYCLOPÆDIA BRITANNICA.
EIGHTH EDITION.

VOLUME I. The Title Page to Volume I., Preface, and List of Contributors, as supplied along with first edition of the Index, to be bound at commencement of Volume I. The Index itself may also be bound with Volume I., but it will be more convenient for reference if bound separately.

II. contains Plates 1 to 23 inclusive.			
III.	do.	24 to 75	do.
IV.	do.	76 to 108	do.
V.	do.	109 to 153	do.
VI.	do.	154 to 174	do.
VII.	do.	175 to 202	do.
VIII.	do.	203 to 232	do.
IX.	do.	1 to 30	do.
X.	do.	1 to 14	do.
XI.	do.	1 to 5	do.
XII.	do.	1 to 5	do.
XIII.	No plates.		
XIV.	do.	1 to 21	do.
XV.	do.	1 to 7	do.
XVI.	do.	1 to 18	do.
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XX.	do.	1 to 42	do.
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ENCYCLOPÆDIA BRITANNICA.

EIGHTH EDITION.

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EIGHTH EDITION

THE
ENCYCLOPÆDIA BRITANNICA,
OR
DICTIONARY
OF
ARTS, SCIENCES, AND GENERAL LITERATURE.
EIGHTH EDITION.

WITH EXTENSIVE IMPROVEMENTS AND ADDITIONS;
AND NUMEROUS ENGRAVINGS.

INDEX.

ADAM AND CHARLES BLACK, EDINBURGH.

MDCCCLX.

[The Proprietors of this Work give notice that they reserve the right of Translating it.]

BIBLIOTHECA
REGIA
MONACENSIS.

GENERAL INDEX.

THE following Index contains a full and complete enumeration of the different subjects treated of in the Twenty-one volumes of this Work. It is intended not merely to facilitate reference to the various Articles and Treatises, but to serve the far more important purpose of bringing into one view the varied and scattered information not indicated by respective heads or titles. This is rendered the more desirable, as the plan of the *ENCYCLOPÆDIA* includes so many general treatises and systems, embracing an immense number of subordinate and collateral topics to which the general title affords no clue. The names printed in capital letters indicate the subjects to which separate articles are assigned, and the first reference is to the volume and page where each article occurs. Immediately following this are the references to the same subject occurring throughout the entire Work, either of a general nature, or specifying the particular light in which it is regarded. These references are generally arranged according to their importance, or the fulness of information they afford; occasionally, however, it was thought expedient to follow the order of sequence in the volumes. The entries in the Index not distinguished by capital letters do not form separate articles, but indicate particular subjects occurring under other general heads; they include, for example, all the genera mentioned in the different articles on Natural History, English names of animals and plants, authors and books referred to, names of places, &c.

It was only in this way that the Index could be rendered an adequate representative of the contents of the Work; and while it necessarily gave to

it a great degree of extension, it obviously affords valuable facilities for finding information on any particular subject. A reader, for instance, desirous of learning as much as possible about Scotland and Scottish affairs, will not only find, under the head SCOTLAND, a general view of the history and statistics of the country, but be referred by the Index to many other parts of the Work (such as BRITAIN, FISHERIES, ROADS, &c.), where a great variety of additional particulars are supplied. Again, as the Sciences are discussed in the Encyclopædia under their general names, the principal details embraced by them are given under such heads as, ANATOMY, CHEMISTRY, ENTOMOLOGY, METAPHYSICS, METEOROLOGY, &c. By consulting the Index, therefore, the student will be saved the trouble of looking through a long treatise in search of information upon particular points; and those, again, who are in quest of information which they were not aware was to be found under such heads, may, in the same way, be enabled to extend their knowledge. The Indexes which follow certain articles (such as those on Natural History, &c.), are here incorporated under one continuous alphabetical arrangement.

It is necessary to observe, that, with the proper character of an Index, that of a Table of Contents is not here combined. For example, under the head SCOTLAND in the Index, no reference is made to the contents of the article so headed in the ENCYCLOPÆDIA; it being presumed that a person making researches about Scotland will commence ascertaining its contents by turning over the pages of that article. But the Index points out other details referring to Scotland which occur under the various heads of AGRICULTURE, BANKS, COAL, FISHERIES, IRON, LIBRARIES, and so forth.

When an article in the Index contains many references to countries and towns, the names of the latter are frequently arranged alphabetically, in the manner exemplified in AGRICULTURE, ARMY, EDUCATION, &c. The adoption of this plan will save time and trouble to persons consulting the Index. The reference to maps is always given last; but it was thought unnecessary to refer to the plates generally, as the subjects of them are always sufficiently indicated in the articles which they are meant to illustrate.

In such a work as the *ENCYCLOPÆDIA BRITANNICA*, a summary and digest of its contents like the present is more than usually necessary. Its extent has rendered the compilation a task of much labour. In such an immense number of references, most of them expressed in figures, it is scarcely to be expected that no inaccuracies will occur, but great care has been taken to avoid them, and to render the Index a faithful and complete representation and exponent of the contents of the entire Work. It must be obvious that, in a publication of such extent and variety of subjects, embracing, as it does, the whole field of human knowledge, everything calculated to give ready access to its stores of information, with increased ease of consultation, is of the utmost importance to the practical usefulness of the Work.

JAMES DUNCAN.

OLD MANSE, DENHOLM, *April* 1861.

In the early part of the century, the literature of the country was almost entirely confined to the production of the poets, who, in the hands of the great masters, had reached a high degree of perfection. The prose writers, however, were not so successful, and the history of the country was almost entirely neglected. It was not until the middle of the century that the prose writers began to rise, and the history of the country to be more fully and accurately recorded. The great masters of the poetry, however, continued to produce works of great beauty and power, and the literature of the country continued to be one of the most brilliant and fertile in the world.

JAMES HENRY

James Henry was born in 1791, and died in 1834.

GENERAL INDEX.

A—ABA

A, the first letter of the alphabet, II. 1—
a numeral letter, 2—as an abbreviation,
17—as an article, X. 750.
AA, several rivers so named, II. 2.
AACHEN, or Aix-la-Chapelle, II. 2, 431.
AAGARD (Christian), Danish poet, II. 2.
Aahmes, Egyptian kings, VIII. 460, 465.
AALBORG, a Danish see, II. 2—city, ib.;
VII. 748; population, 745.
—— his works on bees, IX. 2.
AALEN, in Wurtemberg, II. 2—city, ib.—
mines of, XXI. 938.
Aali Pasha, XXI. 376.
AALSMEER, town in North Holland, II. 3.
AALTEN, town in the Netherlands, II. 3.
AAM, Dutch liquid measure, II. 3.
AAR, river in Switzerland, II. 3; IV. 670;
XIX. 144; XX. 408, 888—rivers in Ger-
many so named, II. 3.
AARAU, city in Switzerland, II. 3.
AARGAU, Swiss canton, II. 3; XX. 882.
AARHUUS, in Denmark, II. 3—a bailiwick,
ib.—a city, ib.—population, VII. 745.
AARLANDERVEEN, town in the Nether-
lands, II. 3.
AARON, Jewish high priest, II. 3; XVIII.
513—a physician, II. 4—Caraites Jew,
ib.—martyr, ib.
—— (Ben Asser), II. 4.
—— (Pietro), II. 4.
—— (Al Raschid), II. 4, 13. See
Harun al Raschid.
AARSSENS (Francis), II. 4.
AAS, village in the Lower Pyrenees, II. 4.
AASAR, town in Palestine, II. 4.
AASI, river, II. 4; XVII. 1.
AATYL, town in Syria, II. 4.
AB, a Hebrew month, II. 4—a Syriac
month, ib.
ABA, II. 5. See Abæ.
—— or Albion, king of Hungary, II. 5.
ABA HANIFAH, or Hanfa, II. 4—mountain
in Armenia, ib.
ABABDE, a tribe of Arabs, II. 5, 219.
ABACA. See Manilla hemp.
ABACÆNUM, town in Sicily, II. 5.
ABACINARE, a kind of punishment, II. 5.
ABACISCUS, in architecture, II. 5; III. 507.
ABACK, a sea term, II. 5.
ABACOT, an ancient cap of state, II. 5.
ABACTORS, II. 5.
ABACUS, ancient cupboard, II. 5—in
architecture, ib.; III. 507—arithmetical
instrument, II. 5—various applications
of the term, 9.
ABADDON, II. 9.
ABADEH, a Persian town, II. 9.
ABADIR, in mythology, II. 9.
ABÆ, a town of Phocis, II. 9.
ABAFI, a sea term, II. 9.
ABAISSÉ, in heraldry, II. 9.
ABAKA (Khan), Mogul emperor, II. 9.
ABAKANSK, mountains in Siberia, II. 9—
town in Siberia, ib.
ABALLABA, ancient Roman castle, II. 9.
ABALUS, island, II. 9.
ABANA, river, II. 9; XX. 903.
ABANCAY, a district in Peru, II. 10.
ABANDONMENT, in marine insurance, II.
10; XII. 422.
ABANO, a town in Italy, II. 10.
ABANTES, a people of ancient Greece, II.
10.
ABANTIAS, a name of Eubœa, II. 10; IX.
364.

ABA—ABB

ABAPTISTON, in surgery, II. 10.
ABARAN, a town in Spain, II. 10—a Per-
sian town, ib.
ABARIM, mountains in Palestine, II. 10.
ABARIS, an ancient sage, II. 10; VIII.
187.
ABARTICULATION, in anatomy, II. 10.
ABAS, a Persian weight, II. 10—in my-
thology, ib.
Abasians, a Caucasian tribe, VI. 342—
language of, XIII. 216.
ABASSI, a Persian coin, II. 11.
Abassides, a dynasty of Saracen princes,
II. 755; XX. 911.
ABATAMENTUM, in law, II. 11.
ABATE, II. 11.
—— a term in law, II. 11.
ABATEMENT, in heraldry, II. 11—in com-
merce, ib.
ABATI (Niccolo), II. 11.
ABATIS or Abattis, II. 11; IX. 798.
ABATON, a building in Rhodes, II. 11.
ABATOR, in law, II. 11.
ABATOS, island in the Nile, II. 11.
ABATOIR, II. 11—in Edinburgh, VIII.
405—Glasgow, X. 654—Paris, XVII.
283.
ABA-UJVAR, a palatinate of Hungary, II.
12.
ABAUZIT (Firmen), II. 12.
ABAVO, in botany, II. 12.
ABB, a term among clothiers, II. 12—a
town in Arabia, ib.
ABBA, a town near Carthage, II. 12—a
Syriac and Chaldee term, ib.
ABBADIE (James), II. 12.
ABBAS-BEN-ABDUL-MOTALLEB, Mahomet's
uncle, II. 13.
—— (Schah), kings of Persia, II. 13;
XVII. 439.
—— Pasha, VIII. 495.
—— Mirza, XVII. 442.
ABBAS-ABAD, Persian town, II. 13.
—— (Hally), his knowledge of surgery,
XX. 815.
Abbases, Egypt subjugated by, VIII.
476, 484.
ABBASSA, II. 13.
ABBASSIDES, a race of caliphs, II. 13.
ABBE, title of, II. 13.
ABBESS, II. 13.
ABBEVILLE, in France, II. 13; XX. 412.
—— in United States, II. 13.
ABBEY, II. 13.
ABBEYBOYLE, an Irish town, II. 14; V.
260.
Abbey Craig, near Stirling, VI. 750;
XX. 703.
ABBEYFEALE, a village in Limerick, II. 14.
ABBEYHOLM, town in Cumberland, II. 14.
ABBEYLEIX, an Irish town, II. 14.
ABBIATE GRASSO, town in Italy, II. 14.
ABBITIBBEE, in British North America,
II. 14.
ABBON, or Abbo Cernuus, II. 14.
—— or Abbo Floriacensis, II. 14.
ABBOT, II. 14; XV. 407.
—— (CHARLES), Lord Colchester, II. 16
—— chosen speaker of the House of
Commons, V. 592—his resignation, 622.
—— (GEORGE), archbishop of Canter-
bury, II. 15; XX. 837.
—— (John), his work on the insects of
Georgia, IX. 8.
—— (ROBERT), II. 16; XX. 837

ABB—ABE

ABBOTSBURY, in Dorsetshire, II. 17.
ABBOTSFORD, residence of Sir Walter
Scott, II. 17; XIX. 822, 823.
ABBOTS-LANGLEY, a village in Herts, II.
17.
ABBREVIATION, II. 17—abbreviations in
common use, 21—in botany, V. 176—
arithmetical, III. 583, n.—characters of,
VI. 419—in ancient codices, VIII. 42.
See Stenography.
ABBREVIATORS, college in Rome, II. 21.
ABB'S, St, promontory, II. 21.
ABCHASIA, in Asiatic Russia, II. 21.
ABCHERON, or Apsheron, II. 22; IV. 381.
ABDALLA, father of Mahomet, II. 22.
Abdallah, a Wahaby chief, III. 365-6.
—— caliph, II. 597; III. 363.
—— head of the Almorayides, II. 602.
ABDALLATIF, physician and traveller, II.
22; XIV. 456.
ABDALMALEK, caliph, II. 23.
—— II. 23. See Avenzoar.
ABDALONYMUS of Sidon, II. 23.
ABDALS, eastern fanatics, II. 23.
Abd-el-Kadir, X. 219, 221, 231—his re-
sistance to the French at Algiers, II.
574; his surrender to the French, 576—
his residence at Broussa, V. 681.
Abd-el-Azyz, III. 364.
Abdelmoumen, II. 601.
ABDERA, a town in Thrace, II. 23.
ABDERAHMAN, Moorish sovereigns of
Spain, II. 24; XX. 461—Abderahman
III., II. 24; XX. 462.
ABDEST, II. 24.
ABDIAS of Babylon, II. 24.
ABDICATION, II. 24.
Abdollariph, his anatomical observations,
II. 755.
ABDOMEN, in anatomy, II. 24—regions of
the, III. 1—muscles of the, 38—wounds
of the, XIV. 431—in insects, IX. 38—
in mollusks, XV. 324. See the zoologi-
cal articles.
Abdominal viscera, diseases of, in domes-
tic animals, XXI. 565.
ABDOMINALES, an order of fishes, II. 24;
XII. 235, 236—their fins and pelvis,
III. 90, 91.
ABDON, II. 24.
ABDUCTION, in law, II. 24—in logic, 25.
ABDUCTOR, II. 25; III. 38, 39.
Abdul Medjid, Sultan, XXI. 374, 376,
379.
—— Hamid, Sultan, XXI. 370, 376.
ABEDNEGO, II. 25.
ABEL, son of Adam and Eve, II. 25—as
a prefix, ib.
—— (CARL FREDERICH), II. 25.
—— (Dr Clarke) on the orang-outang,
XIV. 138, 139.
—— (NIELS HENRI), II. 25; I. 822—
his discoveries in elliptic functions, ib.
—— (THOMAS), II. 25, 42.
ABELARD, Peter, II. 25—his works, II. 27.
ABELLIANS, sect of heretics, II. 27, 25.
ABELLA, town of Campania, II. 27; IV.
322.
ABELLINUM, town in Italy, II. 27; IV.
322.
ABELLIO, II. 27.
Abenau, range of mountains, II. 42.
ABENBERG, town in Bavaria, II. 27.
ABEN-BITAR, Spanish physician, II. 27.
ABENCERRAGES, Spanish family, II. 27.

ABE—ABI

ABEN-EZRA (Abraham), Spanish rabbi,
II. 27.
ABENHEIM, in Hesse Darmstadt, II. 27.
ABENMELECH (Solomon), a Spanish rabbi,
II. 27.
ABENSBERG, in Bavaria, II. 27.
ABENSPERG, in Bavaria, II. 27.
ABERAVON, in Glamorganshire, II. 27;
X. 642.
ABERBROTHICK, II. 27. See Arbroath.
ABERCONWAY, II. 27. See Conway.
ABERCROMBIE (Dr John), II. 28—on the
difference between dreaming and in-
sanity, VIII. 176—on insanity, XIV.
526—weight of his brain, VIII. 264—
on the amount of fluids within the
cranium, XVII. 698.
ABERCROMBY (the Hon. Alexander), II.
28.
—— (Sir RALPH), II. 28—his expedition
to Holland, V. 568, 573; X. 114—and
to Egypt, V. 583; VIII. 489; X. 120—
his death and character, V. 584.
—— (General), his operations in India,
V. 541; XI. 497, 498.
ABERDARE, in South Wales, II. 29.
ABERDEEN (OLD), II. 29—university, XXI.
478; XIX. 763—docks of, VIII. 75—
King's College, XXI. 478—library,
XIII. 403.
—— (NEW), II. 30—Marischal College,
XXI. 480—College library, XIII. 403.
ABERDEENSHIRE, II. 32—cattle of, 341
—fisheries, IX. 647—vitrified forts,
791—green-sand and chalk-flints found
in, XIX. 793—system of farming in,
XIX. 798—agricultural statistics, 796—
798—population, 799.
ABERDOUR, town in Fifeshire, II. 34—
parish in Aberdeenshire, 34.
Aberdovvy, town in Merionethshire, XIV.
543.
ABERFELDIE, village in Perthshire, II. 34.
ABERFFRAU, in Anglesey, II. 34.
ABERFORD, in Yorkshire, II. 34.
ABERFOYLE, II. 34.
ABERGAVENNY, in Monmouthshire, II. 34.
ABERNETHY (Rev. John), II. 34.
—— (JOHN), surgeon, II. 34; XX. 820.
—— town in Perthshire, II. 35.
ABERRATION of light, II. 35; IV. 21—
discovery of, I. 685; IV. 21; III. 804
—— a proof of the earth's motion in its
orbit, I. 687.
—— of the planets, II. 38.
—— in optics, II. 39.
—— spherical, of lenses, XIV. 771;
XVI. 571—mirrors, 574.
ABERTSWITH, in Cardiganshire, II. 39
VI. 234.
ABESTA, II. 39.
Abethell (Mr), on the stability of floating
bodies, XX. 156.
ABETTOR, in law, II. 39.
ABEX, a country of Africa, II. 39.
ABEYANCE, in law, II. 40.
ABGAR, kings of Edessa, II. 40—alleged
message of one of them to Jesus, XII.
761.
ABGILLUS (John), II. 40. See Prester
John.
ABHEBBAD, lake, II. 40.
Abhorters, V. 431.
ABIA, a town of Messenia, II. 40.
ABIAD (Bahr el), II. 40, 214; V. 689;

ABI—ABR

VIII. 425; XVI. 269, 270, 271; XVII. 607; XX. 51—its probable sources, XVI. 271.

ABIANUS, a river in Scythia, II. 40.

ABIATHAR, a Jewish high-priest, II. 40.

ABIB, a Jewish month, II. 40.

Abich, on rocks, XV. 131, 133.

Abichite, mineral, XV. 103.

ABIES, the fir-tree, II. 40. See Fir.

Ablutines, natural order of plants, V. 209.

ABIGAIL, II. 40.

ABIHU, a son of Aaron, II. 40.

ABILA, a Syrian city, II. 40.

ABILDGAARD (Nicolas), II. 41.

ABIMELECH, kings of Gerar, II. 41.

— son of Gideon, II. 41.

ABINGDON, town in Berkshire, II. 41.

ABINTESTATE, in law, II. 41.

ABIPONIANS, a tribe of American Indians, II. 41—language of, XIII. 224.

ABIRAM, a seditious Reubenite, II. 41.

ABISHAI, son of Zeruliah, II. 41.

ABJURATION, II. 41—of heresy, *ib.*—oath of, XVIII. 497.

ABLACTATION, a method of ingrafting, II. 41.

ABLAIKET, a town in the government of Orel, II. 41.

ABLAQUEATION, in gardening, II. 41.

ABLATIVE, in grammar, II. 42; X. 749.

— ABSOLUTE, II. 42.

ABLAVIUS, II. 42.

ABLAY, in Tartary, II. 42.

ABLE (Thomas), II. 42.

ABLECTI, Roman soldiers, II. 42.

ABLEGMINA, in antiquity, II. 42.

Abluents. See Diluents.

ABLUTION, II. 42.

ABNER, the cousin of Saul, II. 42.

ABNOBA, mountains in Germany, II. 42.

ABNORMAL, II. 43.

ABO, a district and city in Finland, II. 43; IX. 585—peace concluded at, XX. 857.

ABOARD, the inside of a ship, II. 43.

ABOLITION, II. 43—of slavery, XXI. 441—Slavery Abolition Act, V. 600; XX. 322. See Slavery and Slave Trade.

ABOLITIONIST, II. 43; XX. 322.

ABOLLA, in antiquity, II. 44.

ABOMEY, capital of Dahomey, II. 44; VII. 620.

ABON, a town and river of Albion, II. 44.

ABONI-TEICHOS, a town of Paphlagonia, II. 44.

ABOO, a mountain in India, II. 44—height of, XVII. 644.

— Sepoy insurrection at, XVI. 311.

ABOO-KEER, Egyptian lake, VIII. 429.

ABOO-SEER, in Egypt, VIII. 497—pyramids of, 501.

ABORIGINES, II. 44.

ABORRHAS, a branch of the Euphrates, II. 44.

ABORTION, II. 44; XIV. 428—sanctioned by Aristotle, III. 569—among Mohammedans, XV. 304—practised by the aborigines of New Holland, IV. 259.

ABORTIVE VELLUM, II. 45.

Abou-duck'n, bird, XVI. 740.

ABOUKIR, a town in Egypt, II. 45—battle of, V. 564; VIII. 489; X. 109; XVI. 135—Napoleon on the consequences of, VIII. 489.

ABOULFEDA, Arabian historian, II. 45—his description of Hamah, XI. 197.

ABOUT (M.), on the government of modern Greece, XI. 18.

ABOUTIGE, a town in Egypt, II. 46.

ABRABANEL (Isaac), rabbi, II. 46.

ABRACADABRA, II. 46.

ABRADATAS, king of Susa, II. 46.

ABRAHAM, II. 46; XII. 766; XVII. 192—his communication with God, I. 466—revelations probably made to, not intended for all the people, 474—slavery in the time of, XX. 318—in Syria, 910.

— (BEN CHAILA), rabbi, II. 47.

— (NICHOLAS), a Jesuit, II. 47.

— (USQUE), Portuguese Jew.

— plains of, near Quebec, XVIII. 726.

— Montcalm defeated by Wolfe on, XXI. 424.

ABR—ABU

ABRAHAMITES, monks, II. 47.

ABRALHOS, islets on the coast of Brazil, II. 47.

ABRANCHIA, order of annelides, XI. 300—*ABRANCHIA setigera*, *ib.*—*A. asetigera*, 302.

ABRANTES, a town of Portugal, II. 47.

ABRASAX, II. 47.

ABRASION, II. 47.

ABRAUM, a kind of red clay, II. 48.

ABRAVANNUS, in Galloway, II. 48.

ABRAXAS, an antique stone, II. 48; IV. 486.

— genus of insects, IX. 216.

— see Abrasax.

ABRAZITE, mineral, II. 48; XV. 77.

ABRESCH (Frederic Louis), II. 48.

ABRIDGMENT, in literature, II. 48.

ABROGATION, II. 48.

ABROTONUM, a town in Africa, II. 48.

ABRUD-BANYA, an Austrian town, II. 48.

ABRUS, a genus of plants, II. 48.

ABRUZZO, a province of Naples, II. 48; XX. 236, 255—climate of, 247.

ABSALOM, a son of David, II. 49—his tomb, II. 50.

— Archbishop of Lund, II. 50.

ABSCESS, in surgery, II. 50; XX. 815, 816, 819—modern treatment of, 827—in animals, XXI. 558.

ABSCISSE, in conics, II. 50; VII. 252, 258.

ABSCONSA, II. 50.

ABSENTEE, II. 50.

ABSINTHIATED, II. 50.

ABSOLUTE, II. 50—philosophy of the, XIV. 610.

— government, II. 50. See Despotism.

— Equations, in astronomy, II. 50.

— number, in algebra, II. 50.

ABSOLUTION, II. 50.

ABSORBENT, II. 51.

— medicines, II. 51.

— vessels, in anatomy, II. 51, 803.

See Lymphatics.

— substances—sulphuric acid, VII. 105; whinstone, oatmeal, 108.

ABSORPTION, function of, II. 51—by roots of plants, V. 100—by leaves, 103.

— of light, Brewster's experiments on, I. 914—polarization of light by, XVI. 647—by uncrystallized bodies, 665—by doubly refracting crystals, 666.

ABSORPTIONS of the earth, II. 51.

ABSORUS, island in the Adriatic, II. 51.

ABSTEMII, in Church history, II. 51.

ABSTENTION, in law, II. 51.

ABSTERGENT medicines, II. 51—dew as an abstergent, VII. 765.

ABSTINENCE, II. 51; XVII. 658—the young least capable of, III. 180—remarkable instances of, *ib.*; VIII. 22, 23.

ABSTINENTS, a set of heretics, II. 52.

ABSTRACT, II. 52—ideas, mathematics, numbers, terms, *ib.*

— in literature, II. 52.

ABSTRACTION, in metaphysics, II. 52; XIV. 590—essential to the geometer and metaphysician, I. 6.

ABSTRUDUM (*reductio ad*), II. 52.

ABSTURTUS, in mythology, II. 52.

ABTHANES, an ancient title of honour in Scotland, II. 52.

ABU-ARISCH, town and district in Arabia, II. 53.

ABUBEKER, Caliph, II. 53; III. 362—the Alcoran arranged by, II. 455.

Abu-el-Mansur, Caliph, VIII. 478.

Abufera, lake in Spain, XX. 488.

ABUKESO, II. 53.

ABULAHOR, a Turkish town, II. 53.

Abul-Casin Mansour. See Firdusi.

ABUL-CASSIM, II. 53.

ABULFARAGIUS (Gregory), II. 53.

ABUL FARAJ ALI, an Arabian poet, II. 53.

ABULFAZI, eastern historian, II. 53.

Abulfeda, XI. 197. See Aboulfeda.

ABULGAZI (Bayadur), a khan of the Tartars, II. 53.

Abul-Hassan, his dials, VII. 775.

ABU-MANSUR, Arabian astronomer, II. 53.

ABUNA, II. 54, 57.

ABU—ACA

ABUNDANT NUMBER, II. 54.

ABUNDANTIA, a heathen divinity, II. 54.

ABURY, II. 54. See Avebury.

ABUS, ancient name of the Humber, II. 54.

ABUSAID (Ebn Aljaptu), Sultan, II. 54.

Abushahr, Abuschehr. See Bushire.

ABUSUMBOI, a town of Nubia, II. 54.

ABU-TEMAN, an Arabian poet, II. 54.

Abydenus on the deluge, VII. 713.

ABYDOS, a city on the Hellespont, II. 54—coins of, XVI. 375.

— a town of Egypt, II. 54; VIII. 505—tablet of, 505.

ABYLA, II. 54.

ABYSS, II. 54—in heraldry, *ib.*

ABYSSINIA, II. 55, 225—Bruce's travels in, V. 689—coffee supposed to be originally a native of, XVII. 628—height of mountains in, 644.

Abyssinian alphabet, II. 615—months, VI. 673—people, II. 220; IX. 352.

ABYSSINIAN, a Christian sect, II. 58.

ACA, a town of Phœnicia, II. 58. See Acre.

ACACIA, in botany, II. 58; V. 190—false acacia, XVII. 758—as a timber tree, XXI. 278.

— in materia medica, II. 58.

— among antiquaries, II. 58.

ACACIANS, sect of heretics, II. 58.

ACACIUS (Luscus), II. 58.

— Saint, II. 58—other persons so named, *ib.*

ACAD, II. 59.

Academical degrees, XXI. 447. See Universities.

ACADEMICS, or Academists, II. 59; XVII. 788.

ACADEMUS, II. 59; XVII. 788.

ACADEMY, II. 59—first establishment of academies in Italy, England, and France, I. 615—their influence in promoting the fine arts, III. 718—inadequate support hitherto given to them in this country, *ib.*—in ancient Athens, IV. 171; XVII. 788—of painting, XVII. 67, 69, 76, 78, 80, *et seq.*—of arts, at Copenhagen, VII. 347—at Petersburg, XVII. 492—Royal Scottish, VIII. 397—Edinburgh Academy, 400—Royal Irish, 225—Royal Academy of Music, London, XIII. 675—Royal Military, at Woolwich, XXI. 926—Academies forming the University of France, XXI. 491.

— Royal, London, XIII. 675—its exhibitions, IX. 453.

— French. See French.

Acadian iron mines, XII. 542.

ACADIE, a name of Nova Scotia, II. 71—ceded to England, XXI. 434.

ACÆNA, a Grecian measure, II. 71.

Acænitus, genus of insects, IX. 188.

Acæphæ, mollusks, XV. 321.

— zoophytes, XXI. 995—*A. vera*, 999—orders and families of, 1000.

ACAMANTIS, an ancient name of Cyprus, II. 71.

Acamapitzin, Mexican king, XIV. 700.

ACAMAS, son of Theseus, II. 71.

ACANTHA, in botany and zoology, II. 71.

Acanthaceæ, nat. order of plants, V. 202.

Acanthia, genus of insects, IX. 163.

Acanthias, genus of fishes, XII. 324.

Acanthicus, genus of fishes, XII. 264.

Acanthocephala, zoophytes, XXI. 980, 977, 978.

Acanthocephalus, genus of entozoa, XXI. 978.

Acanthocinus, genus of insects, IX. 146.

Acanthoclinus, genus of fishes, XII. 309.

Acanthoderma, genus of fossil fishes, XII. 338.

Acanthodes, genus of fossil fishes, XII. 334; XVII. 125.

Acanthodii, fossil fishes, XVII. 123.

Acantholabrus, genus of fishes, XII. 267.

Acanthomera, genus of insects, IX. 130.

Acanthometrea, zoophytes, XXI. 1007.

Acanthonemus, genus of fossil fishes, XII. 345.

Acanthophis, genus of reptiles, XIX. 71.

ACA—ACC

Acanthopleurus, genus of fossil fishes, XII. 338.

Acanthopoda, tribe of insects, IX. 116.

Acanthopsis, genus of fossil fishes, XII. 346.

Acanthoptera, genus of insects, IX. 145.

Acanthopteri, fishes, XII. 272—fossil, XVII. 127.

Acanthopterous fishes, XII. 272.

ACANTHOPTERYGIUS FISHES, II. 71.

Acanthopus, genus of insects, IX. 200.

Acanthoscelis, genus of insects, IX. 85.

Acanthospongia, fossil sponges, XVII. 92.

Acanthurus, genus of fishes, XII. 304—of fossil fishes, 344.

ACANTHUS, in architecture, II. 71—plant, V. 203.

Acanus, genus of fossil fishes, XII. 343.

ACAPULCO, in Mexico, II. 71; XIV. 723.

Acarides, tribe of Arachnides, III. 387.

ACARNANIA, in Greece, II. 72—coins of, XVI. 370.

ACARON, a town of Palestine, II. 72.

Acarus, genus of Arachnides, III. 388—*A. Scabiei*, XII. 663.

ACASTUS, son of Pelias, II. 72.

ACATALECTIC verses, II. 72.

Acbar, XI. 479; III. 746—Sindh conquered by, XX. 306.

ACCA (Saint), II. 72.

ACCAPITARE, in law, II. 72.

ACCAPITUM, a term in ancient law, II. 72.

ACCEDAS AD CURIAM, II. 72.

ACCELERATION, in natural philosophy, II. 72—in astronomy, 74—of falling bodies, 72—law of, discovered by Galileo, III. 801—of the fixed stars, planets, and of bodies on inclined planes, II. 74—of the moon, I. 814; II. 74—accelerated motions, VIII. 344—accelerating forces, 348—law of, in fluids, XIX. 195.

ACCIDENTES, II. 74.

ACCIDENTONES, a kind of gladiators, II. 74.

ACCENSI, II. 74.

ACCENSION, II. 74.

ACCENT, II. 74—Hebrew and Greek, 75—in music, 76. See Music.

Accentor, genus of birds, XVI. 756.

ACCEPTANCE, in commerce, II. 76.

ACCEPTER, II. 76; IX. 428, *n.*

ACCEPTILATION, II. 76.

ACCESSION, in law, II. 76.

ACCESSORY, II. 76—nerves, *ib.*—in pictures, *ib.*

ACCIAIOLI (Donato), II. 76.

ACCIDENT, in grammar, II. 76—in heraldry, *ib.*—in logic, 77.

Accidents on railways, XVIII. 795.

ACCIDENTAL effects, II. 77—colours, *ib.*—point, *ib.*

ACCIPITER, hawk, II. 77. See Hawk.

Accipitres, birds of prey, XVI. 726.

ACCISMUS, II. 77.

ACCIIUS (Lucius), Latin tragic poet, II. 77.

— a poet of the sixteenth century, II. 77.

ACCLAMATION, II. 77—medals, 78.

Acclimation, Mr Knight's theory of, XI. 702.

ACCLIVITY, II. 78.

ACCOLA, II. 78.

ACCOLADE, in chivalry, II. 78.

ACCOLE, II. 79.

ACCOLTI (Benedict), II. 79.

— (FRANCIS), II. 79. See P. Aretino.

ACCOMAC, a county in Virginia, II. 79.

ACCOMMODATION, II. 79—paper, *ib.*; IX. 429.

ACCOMPANIMENT, in music, II. 79; XV. 740—in painting, etc., II. 79.

ACCOMPLICE, II. 79.

ACCOMPLISHMENT, II. 79.

ACCORD, in painting, II. 79.

ACCORDION, musical instrument, II. 79, XV. 708.

ACCORSO (Francis), lawyer, II. 79.

— (MARIANGELO), critic, II. 79.

ACCOUNT, II. 80.

ACCOUNTS, Chamber of, II. 80.

Account-current, V. 29, 30.

— sale, V. 21.

ACCOUNTANT, II. 80.

— GENERAL, II. 80.

ACC—ACH

ACCRETION, II. 80.
 ACCROCHE, in heraldry, II. 80.
 ACCUBATION, II. 80.
 ACCUBITOR, II. 80.
 ACCUMULATION, II. 80.
 ACCURSED, II. 80.
 ACCUSATION, II. 80.
 ACCUSATIVE CASE, II. 81; X. 748.
 ACELDAMA, II. 81.
 ACENTETUM, rock crystal, II. 81.
 Acentronura, genus of fishes, XII. 315.
 ACEPHALA, a class of mollusca, II. 81; XV. 322.
 ACEPHALI, various sects so named, II. 81.
 ACEPHALOUS, II. 81—mollusca, XV. 322.
 ACEPHALUS, obsolete name of the tapeworm, II. 81.
 ACER, the maple tree, II. 81; V. 186. See Maple Tree.
 Aceraceæ, nat. order of plants, V. 186.
 ACERB, II. 81.
 ACERENZA, town of Naples, II. 81.
 ACERINA, genus of fishes, II. 81; XII. 276.
 ACERNO, town of Italy, II. 81.
 Acerothorium, fossil rhinoceros, XVII. 169.
 ACERRA, II. 81.
 — a town in Italy, II. 81.
 Acervularia, fossil corals, XVII. 97.
 ACESAS, II. 81.
 ACESCENT, II. 81.
 ACESINES, an Indian river, II. 81.
 ACESIUS, bishop, II. 82.
 ACESTES, II. 82.
 ACETOR, II. 82.
 Acestra, genus of fishes, XII. 263.
 ACETABULUM, an ancient measure, II. 82—
 in anatomy, ib.; III. 12, 34—in
 botany, II. 82.
 — genus of zoophytes, XXI. 1009.
 ACETAL, II. 82.
 ACETARY, II. 82.
 Acetates, II. 82—acetate of copper and
 lead, use of, in voltaic electricity, XXI.
 633.
 Acetic acid, VI. 510; IX. 758—its power
 of preserving articles of food, 767—
 from peat, XVII. 359.
 ACETOMETER, II. 82.
 Acetone, VI. 512.
 ACETOSA, sorrel, II. 82.
 ACETOSELLA, a species of plant, II. 82;
 V. 91.
 ACHÆA, a town in Rhodes, II. 82.
 Achæan League, IX. 497; XIX. 312—
 coins of, XVI. 371—army of, III. 628.
 ACHÆANS, II. 82.
 ACHÆMENES, II. 82.
 Achæmium, a kind of fruit, V. 134, 137.
 ACHÆUS, II. 82.
 ACHALA, II. 82—coins of, XVI. 371.
 Achalæ Presbyteri, II. 83.
 ACHAIUS, II. 83.
 ACHAIUS, king of Scotland, II. 83.
 ACHALACTLI, kind of king-fisher, II. 83.
 ACHAN, II. 83.
 ACHANE, II. 83.
 ACHARACA, a town in Lydia, II. 83.
 ACHARD (Carl Franz), Prussian chemist,
 II. 83—on the force of adhesion,
 140—on the influence of electricity
 on putrefaction and fermentation, VIII.
 597—on capillary attraction, XII. 95—
 his pyrometer, XVIII. 703—his electric
 break, XXI. 644.
 — (C. F.), on bibliography, IV. 705,
 716.
 ACHARNÆ, II. 83.
 Acharnes, genus of fishes, XII. 288.
 ACHAT, in law, II. 83.
 ACHATES, II. 83—a river in Sicily, ib.
 Achatia, genus of mollusks, XV. 373.
 ACHAZIB, a town of Galilee, II. 83.
 ACHEEN, in Sumatra, II. 83, 84; XX. 805,
 806.
 Acheenese, people of Sumatra, XX. 805.
 ACHELOUS, II. 84; XI. 11.
 Achena. See Achæmium.
 ACHENWALL (Gottfried), II. 84; XX. 549.
 ACHER, a river of Baden, II. 85.
 ACHERN, a city of Baden, II. 85.
 ACHERNER, star, II. 85; IV. 79.
 ACHERON, II. 85.

ACH—ACM

ACHERSET, an ancient corn-measure, II.
 85.
 ACHERUSIA PALUS, II. 85; XX. 239.
 ACHERY (Jean-Luc d'), II. 85.
 Acheus, genus of mammalia, XIV. 190.
 ACHIAR, II. 85.
 ACHIAS, a genus of dipterous insects, II.
 85.
 ACHICOLUM, II. 85.
 Achill island, XIV. 370.
 ACHILLA, II. 85.
 ACHILLEA, genus of plants, II. 85.
 ACHILLES, II. 85—character of, XVIII.
 100—Tendo Achillis, II. 85.
 — revolt of, in Egypt, VIII. 473.
 — (TATIUS), II. 85. See Tatius.
 ACHILLEUS CURSUS, II. 85.
 ACHILLINI (Alexr.), II. 85—his anatomical
 discoveries, 756.
 ACHIOTTE, a drug, II. 86. See Anotta.
 ACHIROPOETOS, II. 86.
 Achirus, genus of fishes, XII. 272.
 ACHLYS, in Pagan mythology, II. 86.
 ACHMET, an Arabian author, II. 86.
 — I, II, III, emperors of the Turks,
 II. 86; XXI. 369, 370.
 — (GEDUC), a Turkish general, II. 86.
 Achmetha, city in Media, VIII. 370.
 ACHMIM, a town of Upper Egypt, II. 86.
 ACHMITE, mineral, II. 86. See Acmite.
 ACHOR, II. 86.
 ACHRAS, genus of plants, II. 86; V. 199.
 ACHRAY, lake in Perthshire, II. 86; XVII.
 454, 456; XIX. 794.
 Achroite, mineral, XV. 89.
 ACHROMATIC, II. 86—telescopes, ib.; XVI.
 534, 531; XIII. 452; XXI. 120—list of
 the most considerable hitherto con-
 structed, 122—doublets, XIV. 775—
 spheres, 772—microscopes, 775, 777,
 778—fluid object-glasses, VI. 14, n. 2—
 fringes in achromatic object-glasses,
 XVI. 621—triple and multiple object-
 glasses, XXI. 120.
 ACHTEL, a German measure, II. 94.
 Achthere, genus of entozoa, XXI. 982.
 ACHTYRKA, a city of Russia, II. 94.
 ACHYR, a town and castle of the Ukraine,
 II. 94.
 ACICANTHERA, in botany, II. 94.
 Acicula, genus of mollusks, XV. 375.
 ACICULÆ, II. 94.
 Aciculidæ, family of mollusks, XV. 375.
 Aciculite, mineral, XV. 120.
 ACIDALIUS (Valens), critic, II. 94.
 — a fountain, II. 94.
 Acidifiable metals, VI. 493.
 ACIDITY, II. 94.
 ACIDOTON, a species of Adelia, II. 94.
 ACIDS, II. 94; VI. 507-514—organic, 515;
 volatile, 510, 517; fatty, 517—in sub-
 stances used for food, IX. 758—mineral
 acids, XV. 64—their alimentary qual-
 ities, VIII. 24—specific gravity of,
 XII. 89—as poisons, XIV. 435; XVIII.
 129—as alteratives, XIX. 611.
 ACIDULÆ, II. 94.
 ACIDULATED, II. 94.
 ACIDULOUS, II. 94.
 ACILIUS GLABRIO (Marcus), Roman Con-
 sul, II. 94.
 Acilius, genus of insects, IX. 101.
 ACINACES, II. 94.
 ACINODENDRUM, a species of Melastoma,
 II. 95.
 ACINOS, a species of Thymus, II. 95.
 ACINUS, II. 95.
 ACIPENSER, sturgeon, II. 95; XII. 317—
 genus of fossil fishes, XII. 338; XVII.
 128.
 Acipenseridæ, family of fossil fishes, XII.
 338—species, 351.
 ACI REALE, a city of Catania, II. 95.
 ACIS, in mythology, II. 95.
 — river, II. 95—its source, 192.
 ACKERMANN (John C. Gottlieb), II. 95.
 Ackland (William), his collodion pictures
 on glass, XVII. 547.
 ACKNOWLEDGMENT, II. 95—money, ib.
 ACLIDES, a Roman weapon, II. 95.
 ACLOWA, a species of Colutea, II. 95.
 Alcysia, genus of arachnides, III. 389.
 ACME, II. 95.

ACM—ACR

ACMELIA, a species of plant, II. 95.
 Acmite, mineral, XV. 82.
 ACNIDA, II. 95.
 ACNUA, a Roman land measure, II. 95.
 ACOMETÆ, II. 95.
 ACETES, II. 95.
 Acolhuans, XIV. 699.
 ACOLUTHI, II. 95.
 Acolutte (Mr) on a flight of ants at
 Breslaw, III. 265.
 ACOLYTHIA, II. 95.
 ACOMINATUS (Nicetas), II. 96.
 Aconcagua, river and province in Chile,
 VI. 543, 547.
 — mountain, XVII. 592; XXI. 603,
 604—height of, 644.
 ACONCROBA, plant, II. 96.
 ACONITI, II. 96.
 ACONITUM, genus of plants, II. 96; V.
 180, 89—poisonous properties of, XIV.
 439; XVII. 702—fable concerning, VI.
 386.
 ACONTIAS, a snake, II. 96; XIX. 41.
 ACONTIUM, a Greek dart, II. 96.
 ACONTIUS of Cea, II. 96.
 — (JAMES), II. 96.
 ACORA, in Guinea, XI. 89.
 Acoraceæ, natural order of plants, V. 214.
 ACORIS, an Egyptian king, II. 96.
 ACORN, II. 96; V. 134, 135, 113; XVII.
 768.
 ACORUS, a genus of plants and corals, II.
 96.
 ACOSTA, (Joseph d'), II. 96.
 — (URIEL d'), II. 97.
 ACOSTAN, island, II. 97.
 Acotyledoneæ, a division of plants, V.
 216.
 Acotyledonous plants, V. 76, 84, 141, 180
 —germination of, 165—number known,
 224—number of fossil species, V. 233—
 number described, XVII. 626.
 A'Court (Sir William), V. 631.
 ACOUSMATICI, II. 97.
 ACOUSTIC, II. 97—disciples, ib.—ducts, ib.
 —vessels, ib.
 ACOUSTICS, II. 97—theory of vibrations, I.
 728—progress of, I. 891—principles on
 which music is founded, 728—different
 degrees of sensibility in the organs of
 seeing and of hearing, ib.—echo, VIII.
 373—acoustic figures, I. 891—Chladni's
 experiments on, ib.; 892—recent
 writers on, 893—speaking-trumpet,
 XXI. 360—hearing-trumpet, ib. See
 Organ, Trumpet, Harmonics, Music,
 Temperament, Hearing, Echo.
 ACQS, a town in France, II. 112.
 ACQUAPENDENTE, a town in Italy, II. 112
 —Fabricius of, IX. 464.
 ACQUARA, a Neapolitan town, II. 113.
 ACQUARIA, a town in Italy, II. 113.
 ACQUAVIVA, a Neapolitan town, II. 113.
 ACQUI, a province and town in Italy, II.
 113.
 Acquisitiveness, XVII. 562.
 ACRA, a country of Africa, II. 113—one of
 the hills on which Jerusalem stood, ib.;
 XII. 736, 737.
 — JAPYDIA, a promontory in the
 kingdom of Naples, II. 113.
 ACRAEA, genus of insects, IX. 207.
 ACRAGAS, a town in Sicily, II. 113. See
 Agrigentum.
 Acramphibrya, class of plants, V. 179.
 ACRASIA, II. 113.
 ACRE, a town in Palestine, II. 113; XVII.
 182—taken by Saladin, VIII. 481—re-
 taken by the Crusaders, ib.; XVII. 197;
 by the Mamelukes, ib.—taken by Ibra-
 heem Pasha in 1831, VIII. 494—
 Bonaparte's siege of, V. 568; X. 112;
 XVII. 198—attacked by the British in
 1840, V. 668.
 — a land-measure, II. 114.
 Acreage of the principal crops in Scot-
 land, XIX. 796, 797.
 ACRE-FIGHT, II. 115.
 ACRIBEIA, II. 115.
 ACRIDOPHAGI, or locust-eaters, II. 115.
 ACRISIUS, II. 115.
 Acrita, a division of annulose animals,
 IX. 60.

ACR—ACT

ACRITAS, a promontory of Messenia, II.
 115.
 ACROAMA, II. 115.
 ACROAMATIC, II. 115.
 ACROAMATICI, II. 115.
 ACROATIC, one class of Aristotle's lec-
 tures, II. 115.
 ACROBATES, ancient rope-dancers, II. 115.
 ACROBATICA, II. 115.
 Acrobrya, class of plants, V. 180, 216.
 Acrocera, genus of insects, IX. 236.
 ACROCERAUNIA, II. 116.
 ACROCHERISMUS, II. 116.
 Acrochordus, genus of reptiles, XIX. 63.
 Acrocidaris, fossil echinoidea, XVII. 100.
 Acrocinus, genus of insects, IX. 145.
 ACROCORINTHUS, II. 116.
 ACRODUS, genus of fossil fishes, II. 116;
 XII. 341; XVII. 118.
 ACROGASTER, genus of fossil fishes, II.
 116; XII. 343.
 ACROGENS, plants, II. 116; V. 80, 84, 180,
 216—reign of, in geological times, 234.
 ACROGNATHUS, genus of fossil fishes, II.
 116; XII. 347.
 Acroleine, in chemistry, VI. 510.
 ACROLEPIS, genus of fossil fishes, II. 116;
 XII. 335; XVII. 125.
 ACROLITH, II. 116.
 ACROMION, in anatomy, II. 116.
 ACROMONOGRAMMATICUM, II. 116.
 ACRON, a physician, II. 116.
 ACRONICAL, II. 116.
 ACROPOLIS of Athens, II. 116; III. 466;
 IV. 159, 165—its geological composi-
 tion, XI. 11—sculptures of Phidias on,
 XVII. 507.
 ACROPOLITA (George), Byzantine histo-
 rian, II. 116.
 Acropoma, genus of fishes, XII. 279.
 Acrosalenia, fossil echinoidea, XVII. 100.
 ACROSPHIRE, II. 116.
 ACROSPIRED, in malt-making, II. 116; V.
 322.
 ACROSTIC, in poetry, II. 116.
 ACROSTICHUM, genus of ferns, II. 116.
 ACROSTOLIUM, II. 116.
 ACROTELEUTIC, II. 116.
 ACROTEMNUS, genus of fossil fishes, II.
 116; XII. 338.
 Acroterium, in architecture, III. 507.
 Acrydium, genus of insects, IX. 159.
 ACT, II. 116—of faith, ib.; XII. 390—in
 dramatic poetry, II. 117—among law-
 yers, ib.
 ACTA Consistorii, Diurna, Eruditorum,
 Populi, Senatus, II. 117.
 ACTÆ, II. 118.
 ACTÆA, a plant, II. 118.
 ACTÆON, II. 118.
 —, genus of mollusks, XV. 369.
 Acteonella, fossil mollusks, XVII. 111.
 Acteonina, fossil mollusks, XVII. 109, 111.
 ACTIAN games, II. 118.
 Actiar, bay of, IV. 743.
 ACTINIA, genus of zoophytes, II. 118; XXI.
 985.
 Actiniaria, zoophytes, XXI. 1004.
 Actinidæ, zoophytes, XXI. 1004.
 ACTINOBATIS, genus of fossil fishes, II.
 118.
 ACTINOCAMAX, II. 118.
 ACTINOCERAS, fossil cephalopods, II. 118;
 XVII. 112.
 ACTINOCRINITES, a genus of fossil cri-
 nodea, II. 118; XVII. 98.
 Actinoida, fossils, XVII. 96—P. G. Gosse's
 arrangement of living species, XXI.
 1004, n. 2.
 Actinolite, XV. 81.
 ACTINOMETER, II. 118; VI. 781; XIV.
 638.
 Actinometry, XIV. 638.
 Actinophrys, genus of zoophytes, XXI,
 1007.
 Actinote, XV. 81.
 ACTIO, in Roman antiquities, II. 118.
 ACTION, II. 119—in commerce, me-
 chanics, &c., ib. See Dynamics.
 ACTIONARY, II. 119.
 ACTIUM, II. 119—era of, VI. 672—battle
 of, VIII. 471; XIX. 329.
 ACTIUS, II. 120.

ACT—ADA

ACTIVE, II. 119—verbs, *ib.*; X. 772.
 ACTON, a village in Middlesex, II. 120.
 — (Sir John) XX. 260, 261.
 ACTOR, in the drama, II. 120—rank of actors in Greece, VIII. 137, 142—in Rome, 142—their fate in England during the civil wars, 160—effect of the monopoly of the London theatres on, 168—Prynnes' book on, IV. 713—the disrepute in which they are held, XX. 75—emoluments of, XXI. 168. See Theatre.
 — ancient proper name, II. 120.
 ACTORA, genus of insects, IX. 254.
 ACTORUM TABULÆ, II. 120.
 ACTRESSES, their first introduction on the English stage, VIII. 161; XXI. 170—their character in the reign of Charles II. 162—chief actresses of the English stage, XXI. 174, 175. See Theatre.
 ACTS OF PARLIAMENT, II. 117; IV. 723; XVII. 300.
 — of the Apostles, II. 118; XIII. 718.— of Pilate, II. 118.
 ACTUARIAL NAVES, II. 120.
 ACTUARIUS, a Greek physician, II. 120; XIV. 455.—his knowledge of surgery, XX. 814.
 — an officer so named, II. 120.
 ACTUARY, II. 120.
 ACTUS, an ancient measure of length, II. 120.
 ACUANITES, another name for the Manichees, II. 120.
 ACUBA japonica, shrub, V. 171; XI. 748.
 ACULEATA, section of the hymenoptera, IX. 193.
 ACULEATE, II. 120.
 ACULEI, II. 120.
 ACULER, II. 120.
 ACUMINA, II. 120.
 ACUNA (Christopher d') a Spanish Jesuit, II. 120.
 ACUPUNCTURE, II. 120.
 ACUTE, II. 120—angle, *ib.*—harmonics, 110.
 ACUTIATOR, II. 120.
 AD, Latin preposition, II. 120—ad bestias—ad hominem—ad ludos—ad metalla—ad valorem, 121.
 ADACNA, genus of mollusks, XV. 349.
 ADAGE, II. 121.
 ADAGIO, in music, II. 121.
 ADAIR, town in Ireland, II. 121.
 — two counties in U.S., II. 121.
 ADAL, region between Abyssinia and the Red Sea, II. 121.
 ADALBERT (Saint), II. 121.
 ADALIA, Turkish town, XIX. 648.
 ADALIDES, II. 121.
 ADAM, II. 121; I. 449, 453—his original state, XXI. 197—connection between his sin and that of all mankind, 202, 203—his peculiar position in Paradise, 205—his representative character, 206.
 — of Bremen, II. 124.
 — (Dr Alex.), Rector of High School, Edin., II. 124—his misapprehension respecting a Roman codicil, VI. 738—on catapults, &c., 332—animadversions on his grammar, XX. 783.
 — (Edouard), his improvement of stills, VIII. 49.
 — (Melchior), II. 125.
 — (Robert), architect, II. 125—his architectural works, III. 456.
 — (William), Baron of Exchequer, II. 126.
 ADAM'S Apple and Bridge, II. 127.
 — Peak, II. 127; VI. 390—height of, XVII. 646.
 ADAMANT, II. 128. See Diamond.
 Adamantine spar, VII. 420; XV. 87.
 ADAMAU, African country, II. 214, 229; XIX. 565—Dr Barth's visit to, X. 478.
 ADAMI POMUM, II. 128.
 ADAMIC EARTH, II. 128.
 ADAMITES, ancient heretics, II. 128.
 ADAMS, a township in Massachusetts, II. 128—name of six counties in U.S., *ib.*
 — (Daniel), V. 553.
 — (Francis), his translation of the medical works of Paulus Ægineta, XX. 814, *n. l.*

ADA—ADD

ADAMS (JOHN), II. 128; XXI. 424, 435, *et seq.*, 755—his letters of Novanglus XVI. 193.
 — (John), Mutineer of the Bounty, XVII. 718.
 — (John Couch), on Laplace's calculations regarding the moon's acceleration, I. 815, *n.*—discovery of Neptune from theory, 827—on the perturbations of Uranus, 830; IV. 93; prior to M. Leverrier in his mathematical investigations of this subject, I. 830—his other investigations, 832—prize founded in commemoration of his discoveries, *ib.*—on the lunar parallax, IV. 89—on Saturn, 92.
 — (John Quincy), II. 129; XXI. 441.— on Monads, III. 199.
 — (William), on Japan, XII. 689, 690, *et seq.*
 — (W. Bridges), his fish-joint for rails, XVIII. 757—his suspended girder rail, 758, 759.
 — (Messrs), their work on the genera of recent mollusca, XV. 329—their nomenclature, *ib.*—on the habits of the Auriculida, 375—on the genus Phorus, 382; and on other mollusks, 385, 388, *et seq.*
 ADAMS' and Deane's revolvers, XI. 102.
 ADAMSON (Patrick), II. 129.
 ADANA, a town of Asia Minor, II. 130.
 ADANSON (Michael), II. 130—his account of the green monkey, XIV. 140.
 ADANSONIA, II. 131; V. 184. See Baobab-tree.
 ADAPIS, an extinct quadruped, II. 131.
 ADAR, a Hebrew month, II. 131.
 ADARCON, an ancient coin, II. 131. See Daric.
 ADARME, a Spanish weight, II. 131.
 ADATAIS, II. 131.
 ADCORDABLES DENARI, II. 131.
 ADCRESCENTES, II. 131.
 ADDA, river, II. 131.
 ADDECIMATE, II. 131.
 ADDEPHAGIA, in medicine, II. 132.
 ADDER, II. 132. See Viper.
 ADDER'S GRASS, a cryptogamous plant, II. 132.
 Adder's tongue, genus of ferns, V. 216.
 ADDEXTROTORES, II. 132.
 ADDICE, II. 132.
 ADDICTI, II. 132.
 ADDICTIO IN DIEM, II. 132.
 ADDICTION, II. 132.
 Addington (Henry), V. 534—elected speaker, *ib.*—his administration, 576; IX. 857; XVII. 740, 741—his alteration of the sinking fund, X. 320.
 ADDISCOMBE COLLEGE, II. 132.
 ADDISON (Joseph), II. 132—his opinion of Hobbes's *Treatise on Human Nature*, I. 42—his censure of the French authors of his age, 55—value of his essays in widening the circle of mental cultivation, 160, 161—his essays on the pleasures of imagination, 161—his reputation as a metaphysician has suffered by the beauty and clearness of his style, 83, 161—reasons for his being thought superficial, 161—his definition of "fine writing," 162—merits of his style and writings, *ib.*—his argument for the immortality of the soul, *ib.*—on the care with which Nature disseminates her blessings, 163—quotation from, concerning ideas, with Dr Blair's strictures thereon, 272—precision of his ideas on colours, 273—on dreams, III. 321, *n.*—on beauty, IV. 538—his connection with Budgell, V. 725—his dialogues, VII. 799—Dennis on his "Cato," and the absurdities that arise from preserving the unity of place, VIII. 151; character of that play, 164—his hymns, XII. 189—on Damascus, VII. 639—his poetry, XVIII. 124—his want of poetic genius, XX. 71—his connection with Steele, 672—his defective reading, XXI. 172—on wit, 894—his quarrel with Pope, XVIII. 334—his birth-place, XXI. 879.

ADD—ADM

Addison (Charles G.), on the ruins of Palmyra, XVII. 222, 223.
 — (Lancelot), II. 136.
 — a county in Vermont, U.S., II. 136.
 — (Thomas), on navigation, XVI. 5.
 ADDITION, in law, II. 136—of place, *ib.*—in algebra, II. 490, 494—in arithmetic III. 583—of vulgar fractions, 598—of decimals, 600, 602, 603.
 ADDIX, a Greek measure, II. 137.
 ADDLE EGGS, II. 137.
 ADDUCENT MUSCLES, or adductors, II. 137; III. 38, 39.
 ADEIA, II. 137.
 Adela, genus of insects, IX. 219.
 ADELAIDE, a town and county in Australia, II. 137; IV. 294, 296—climate of, 296.— Madame, sister of Louis Philippe, X. 201, 231.
 Adelaide's (Queen), College and naval fund, XVI. 118.
 ADELARD, II. 137; X. 503.
 ADELFOR, a town in Sweden, II. 137.
 ADELIE, II. 137.
 Adellum, genus of insects, IX. 132.
 ADELME, bishop of Shireburn, II. 137, 458.
 ADELNAU, in Prussia, II. 137.
 ADELPHIANI, a sect of ancient heretics, II. 137.
 ADELSBERG, a town of Illyria, II. 137—stalactitic caverns of, VI. 68.
 ADELSKALC, II. 137.
 ADELSON, II. 137.
 ADELUNG (John Christopher), II. 137—list of his works, 138—his Mithridates, XIII. 197, 199; IX. 343; XVII. 528; Dr Young's review of, XXI. 964; completed by Vater, 529—on the language of Thibet, XIII. 198—on the Celtæ, IV. 366.
 ADEMPTION, in civil law, II. 139.
 ADEN, a town in Arabia, II. 139 III. 361—plan of the port of, II. Pl. III.
 ADENAU, a circle in Prussia, II. 139.
 Adenoma, glandular growths, XVII. 691.
 ADEPHAGA, family of insects, IX. 77.
 ADEPTS, II. 139.
 ADERNO, a Sicilian city, II. 139.
 ADERSBACH FELSEN, II. 139.
 ADES or HADES, II. 140.
 ADESSENIANS, II. 140.
 Adfoo, Egyptian village, VIII. 513.
 ADHA, a Mahometan festival, II. 140.
 Adherbal, VI. 290; XVI. 350.
 ADHESION, II. 140.
 Adhesiveness, phrenological faculty of, XVII. 562, 673.
 ADHIL, II. 141.
 ADIABENE, II. 141.
 ADIANTUM, a family of ferns, II. 141; V. 216.
 ADIAPHORISTS, II. 141.
 Adie (Alex.), optician,—his sympiezometer, IV. 458.
 — (Alex. J.), on the expansion of building materials by heat, XI. 268—his pyrometer, XVIII. 705.
 ADIGE, a river of Italy, II. 141; XII. 637; XIII. 644; XXI. 551.
 ADIMANTIUS, a Greek physician, II. 141.
 Adinole, mineral, XV. 71.
 ADIPOCRE, II. 141.
 ADIPOSE, tissue of the human body, II. 141, 787—cells, XVII. 650.
 ADIRONDACK, mountains in New York, II. 141; XVI. 213; XXI. 420.
 ADIT, II. 141—of a mine, *ib.*; XV. 226 and *n.*
 ADJAZZO, II. 141. See Ajaccio.
 ADJECTIVE, in grammar, II. 141; X. 773; 790—comparison of, 775, 790.
 ADJOURNMENT, II. 141.
 ADJUDICATION, in Scottish law, II. 141.
 ADJUSTMENT, II. 141.
 ADJUTAGE, II. 141; XII. 111—flow of water through cylindrical, 115; through conical, 117, 119.
 ADJUTANT, II. 142—Adjutant-General, 142; III. 663.
 — bird, XVI. 799.
 ADLEGATION, II. 142.
 ADLOCUTION, II. 142.
 Admetus, IX. 277.

ADM—ADU

ADMINICLE, II. 142.
 ADMINISTRATOR, II. 142.
 ADMIRABILIS SAI, II. 142.
 ADMIRAL, II. 142; XVI. 102—of the fleet, II. 142; XVI. 102—Lord High-Admiral, II. 143; XVI. 103—promotions to the rank of, in 1787, V. 526—Vice-Admiral, II. 145—Turkish Port-Admiral, XXI. 382.
 — in Conchology, II. 144.
 Admiral (Jacob), his work on insects, IX. 4.
 ADMIRALTY, High Court of, II. 144—principal officers of, 145.
 — Scotland, II. 148.
 — code of signals, XX. 25.
 — Bay, II. 147—Inlet, *ib.*—Islands, *ib.* IV. 264.
 Admiration, point of, XVIII. 685.
 ADMONITION, II. 148—A. Fastium, *ib.*
 ADMORTIZATION, II. 148.
 ADNATA, II. 148.
 Adolecera, genus of insects, IX. 106.
 ADOLESCENCE, II. 148; XIV. 425.
 Adolphus (Gustavus). See Gustavus.
 — (Frederick) king of Sweden, XX. 887.
 Adon, name applied to God, XXI. 189.
 ADONAI, II. 148; XXI. 189.
 ADONIA, feasts in honour of Venus and Adonis, II. 148.
 ADONIC VERSE, II. 148.
 ADONIAH, a son of David, II. 148.
 ADONIS, II. 148.
 — a river of Phœnicia, II. 148; XX. 904—name of a plant, II. 148.
 ADONISTS, II. 148.
 ADOPTIANI, ancient heretics, II. 148.
 ADOPTION, II. 149.
 ADOPTIVE, II. 149—arms, *ib.*
 ADORAIM, a city of Judah, II. 149.
 ADORATION, II. 150.
 ADOREA, II. 150.
 ADORF, a town in Saxony, II. 150.
 Adorium, genus of insects, IX. 150.
 ADOSCUATION, II. 150.
 ADOSEE, in heraldry, II. 150; XI. 332-3.
 Adonan, Arabian tribe, III. 348.
 ADOUR, river in France, II. 150; XVIII. 701.
 ADOWA, capital of Tigré in Abyssinia, II. 150, 56.
 ADÓXA, a genus of plants, II. 151.
 ADRA, a seaport in Spain, II. 151.
 ADRACHNE, a species of arbutus, II. 151.
 ADHAMMELECH, II. 151.
 ADAMTTIUM, II. 151.
 ADRASTEIA, in mythology, II. 151.
 — CERTAMINA, games, II. 151.
 ADRASTUS, king of Argos, II. 151; VII. 507.
 ADRAZZO, II. 151. See Ajaccio.
 ADRIA, a town of Lombardy, II. 151.
 ADRIAN, or Hadrian (Publius Ælius), Roman emperor, II. 151. See Hadrian.
 — Popes so named, II. 151, 152.
 — (Cardinal), II. 153; XX. 468.
 ADRIANI (Giambattista), II. 153.
 ADRIANISTS, a sect of heretics, II. 153.
 ADRIANOPLE, a city in Turkey, II. 153—treaty of, XIX. 497; IV. 743.
 ADRIATIC SEA, II. 153.
 ADRIPALDA, a city in Naples, II. 153.
 ADROGATION, in Roman antiquities, II. 153.
 ADSIDELE, II. 153.
 Adsiger (Peter), on magnetism, XIV. 2.
 ADSTRICTION, II. 153.
 ADULA, a mountain in Rhetia, II. 153.
 Adularia, mineral, XV. 70.
 ADULE, a town of Ethiopia, II. 153.
 ADULLAM, II. 154.
 ADULT, II. 154.
 ADULTERATION, II. 154—of food, *ib.*; IX. 769; XIV. 440—of coin, II. 154—of wines, *ib.*—paper, XVII. 260—pepper, 405—of tea, in China, XXI. 87—in Britain, *ib.*—of tobacco, 295.
 ADULTERINE, in civil law, II. 155.
 ADULTERY, II. 155—a ground of divorce in Scotland, XII. 54—its punishment in China, VI. 567—consequences of divorce on the ground of, XII. 56—various meanings of the term, II. 156.

ADU—AEL

ADUNATI, II. 156.
 Adur, river in Sussex, XX. 839.
 ADVANCED, II. 156—ditch, guard, II. 156.
 ADVENT, in the calendar, II. 156.
 AD VENTREM INSPICIENDUM, II. 156.
 ADVENTURE BAY, II. 156.
 ADVENTURER, II. 156—adventurers, an ancient company of merchants, *ib.*; XXI. 915.
 ADVERB, II. 156; X. 775, 790—in the Egyptian language, XI. 425.
 ADVERSARIA, II. 156.
 ADVERSATIVE, II. 156.
 ADVERSITOR, in antiquity, II. 157.
 ADVERTISEMENT, II. 157.
 ADVICE, in commerce, II. 157—boat, *ib.*
 ADVOCATE, II. 157—Faculty of Advocates, 158—English VII. 465—Scotch, VIII. 395; their library in Edinburgh, *ib.* XIII. 400.
 — (Lord), in Scotland, II. 158.
 Advocate-General of the Admiralty, II. 147.
 ADVOCATION, a process in Scottish law, II. 158.
 ADVOWEE, II. 158.
 ADVOWSON, in common law, II. 158; VIII. 744.
 ADY, a species of palm, II. 158.
 ADYNAMIA, II. 158.
 ADYNAMON, II. 158.
 ADYTUM, II. 158.
 ADZE, II. 158.
 AE or Æ, dipthong, II. 159.
 ÆACEA, II. 159.
 ÆACUS, II. 159.
 ÆCHMALOTARCHA, II. 159.
 Æchmodus, genus of fossil fishes, XVII. 126.
 Ædelforsite, mineral, XV. 76.
 EDES, II. 159.
 — genus of insects, IX. 225.
 ÆDICULA, II. 159.
 ÆDILE, Roman magistrate, II. 159.
 ÆDILITIUM ÆDICTUM, II. 159.
 ÆDITUUS, II. 159.
 ÆGAGES or ÆGATES, islands off the coast of Sicily, II. 159; XX. 246.
 Ægæ, VIII. 389.
 ÆGAGROPILA, II. 159.
 ÆGEAN SEA, II. 159.
 ÆGEUS, king of Athens, II. 159; IV. 192.
 Ægialia, genus of insects, II. 120.
 ÆGIAS, II. 160.
 ÆGIDA, a town of Istria, II. 160.
 ÆGILOPS, II. 160.
 — plant, the supposed original of wheat, XVII. 630.
 ÆGIMURUS, an island near Carthage, II. 160.
 ÆGINA, daughter of Asopus, II. 160.
 — island, II. 160—coins of, XVI. 371—sculpture of, XIX. 854.
 ÆGINETA (Paulus), surgeon, II. 161; XIV. 455; XX. 814—Adam's translation of his works, *ib.* n. 1.
 ÆGINETARUM FERLE, II. 161.
 ÆGINHARD, secretary of Charlemagne, II. 161.
 ÆGIPHILA, in botany, II. 161.
 ÆGIS, in ancient mythology, II. 161.
 ÆGISTHUS, II. 161.
 ÆGIUM, a town of Achaia, II. 161.
 ÆGOBOLIUM, in antiquity, II. 161.
 Ægocera, genus of insects, IX. 210.
 ÆGOPIDIUM, a genus of plants, II. 161.
 ÆGOSPOTAMOS, river, II. 161—battle of, IV. 208—descent of a stone near, XIV. 629.
 ÆGYPTUS, II. 161.
 ÆINAUTÆ, II. 161.
 ÆLFRIC, a Benedictine monk, II. 161.
 ÆLIA CAPITOLINA, II. 162; XII. 734, 775; XIX. 343.
 ÆLIANUS (Claudius), II. 162—his natural history, XIV. 124—Gesner's edition of his works, X. 597—on the worship of Apis, III. 297.
 — (Tacticus), II. 162.
 Ælius Gallus, his expedition into Arabia, III. 362.
 Ællopos, genus of fossil fishes, XII. 342.
 ÆLTERE, a Flemish town, II. 162.

ÆL—ÆS

ÆLURUS, cat deity of Egypt, II. 162.
 ÆMILIUS (L. Paullus), II. 162; VI. 295.
 — (PAULUS), II. 162.
 ÆMOBOLIUM, in antiquity, II. 162.
 Ænaria. See Ischia.
 ÆNEAS, II. 162—character of, XVIII. 100, 105.
 — (SYLVIVS), Pope, II. 162. See Pius II.
 ÆNEID, II. 162; XVIII. 105. See Virgil.
 Ænesidemus, his scepticism, XIX. 707.
 Aenezes, Arab tribe, III. 348.
 ÆNIGMA, II. 162.
 ÆNITHOLOGUS, II. 162.
 ÆOLLE INSULÆ, II. 162.
 ÆOLIAN HARP, II. 162; XV. 709.
 — rocks, XV. 150, 155. See Aerial rocks.
 ÆOLIC, II. 162—dialect, *ib.*; XIII. 210—digamma, II. 162—verse, *ib.*
 ÆOLIPILE or Eolipile, in hydraulics, II. 163; IV. 793.
 ÆOLIS or ÆOLIA, a country of Asia Minor, II. 163—coins of, XVI. 375.
 — genus of mollusks, XV. 390—embryo of, 399.
 Æolodon, fossil reptiles, XVII. 152.
 ÆOLUS, god of the winds, II. 163.
 ÆON, II. 163; X. 686 *et seq.*
 ÆORA, a kind of exercise, II. 163.
 ÆPINUS (F. U. Theodore), II. 163; I. 987—his hypothesis to explain the phenomena of magnetism and electricity, 743—on electricity, VIII. 529, 530—on the pyro-electricity of tourmaline, 558—on the electricity of melted bodies, 565—the inventor of electrical condensers, 614—on magnetism, XIV. 5, 24—his artificial magnets, 70—his theory of magnetism, 91.
 ÆQUI, ancient people of Italy, II. 165.
 ÆQUIMELIUM, II. 165.
 Æquoreidæ, family of zoophytes, XXI. 1000.
 ÆRA, in chronology, II. 165. See Era, Chronology.
 ÆRARIUM, II. 165.
 ÆRARIUS, II. 165.
 ÆERIA, the ancient name of Egypt, II. 165.
 Aerial roots, V. 77.
 — rocks, XV. 150—classification of, 155.
 — telescope, XXI. 119.
 ÆERIE, II. 165. See Airy.
 ÆERNEN, a Swiss town, II. 165.
 ÆERODYNAMICS, II. 165. See Dynamics.
 ÆEROLITE, II. 165—ærolites in the British Museum, XIV. 635—the kaaba at Mecca probably an, I. 459; XIV. 378. See Meteorolite.
 ÆEROMANCY, II. 165; VIII. 54.
 ÆEROMETRY, II. 165.
 Aeron, river in Cardiganshire, VI. 234.
 ÆERONAUTICA, II. 165.
 ÆERONAUTICS, II. 166—Gay Lussac's balloon ascent, I. 939—height attained by MM. Bixio, Barral, and Welsh, *ib.* n. 2; XIV. 640—Guyton de Morveau's ascent, XI. 165—Messrs Green and Rush's ascent, XIV. 640. See Balloon.
 ÆEROPHYLACEA, II. 185.
 ÆEROPHYTES, parasite plants, II. 185.
 Aerostation, Cayello's work on, VI. 345.
 ÆERSCHOT, a city of Belgium, II. 185.
 ÆERTSEN (Peter), II. 185.
 ÆRUGINOUS, II. 185.
 ÆRUGO, rust of copper, II. 185.
 ÆRUSCATOR, ancient strolling beggars, II. 185.
 Æs, II. 185—circumforaneum, *ib.*—equestre, *ib.*—uxorium, *ib.*—grave, XVI. 383 *et seq.*—used in statuary, XIX. 843.
 Æsalus, genus of insects, IX. 128.
 ÆSCHINES, an Athenian philosopher, II. 185.
 — a Grecian orator, II. 185—his oration against Demosthenes, VII. 728.
 Æschrión, VI. 286.
 ÆSCHYLUS, II. 186; XX. 382, 448, 449—his improvements of the Greek drama, VIII. 134—effects of his tragedy, the Eumenides, on the audience, 136—

ÆS—AFR

character of his works, 138; Stanley's edition of them, XX. 537.
 Æschynite, mineral, XV. 111.
 ÆSCULAPIUS, II. 187; XIV. 451—his surgical skill, XX. 809—his temple at Epidaurus, IX. 274.
 Æshna, genus of insects, IX. 176.
 ÆSOR, the fabulist, II. 187; IX. 461—Caxton's edition of his Fables, XVIII. 535.
 — a Greek historian, II. 187.
 — (CLÓDIUS), Roman actor, II. 187.
 Æsophagus, XXI. 564. See Esophagus.
 ÆSTHETICS, II. 188; IV. 514; XIX. 108—as applied to music, XXI. 29.
 Æsthiology, comparative, III. 94.
 ÆSTIMATIO CAPITIS, II. 188.
 ÆSTIVAL, II. 188.
 Æstivation, in botany, V. 121.
 ÆSTUARY, II. 188; IX. 599, 600—comparative amount of river and tidal water in, XVI. 82.
 ÆSTUI or ÆSTII, a people of Germany, II. 188; X. 572.
 ÆSYMNETES, II. 188.
 ÆSYMNIUM, II. 188.
 Æetas, XIII. 743.
 ÆETH, II. 188; IV. 157.
 ÆETHALIA, the ancient name of Elba, II. 188.
 ÆTHELING, II. 188.
 — (Edgar). See Edgar Ætheling.
 Æthelmare, II. 429.
 ÆTHELSTAN, II. 188. See Athelstan.
 ÆTHER, II. 188; IV. 448, 453; XIV. 439—several fluids so named, II. 189.
 ÆTHERIAL, II. 189.
 ÆTHIOPIA, II. 189. See Ethiopia.
 Æthroscope, VI. 783; VII. 769; XI. 265; XIII. 345.
 ÆTIANS, a branch of Arians, II. 189.
 ÆTIOLOGY, II. 189.
 ÆTION, an ancient Greek painter, II. 189.
 ÆTITES, or eaglestone, II. 189.
 ÆTIUS, the Arian, II. 189.
 — physician, II. 189; XIV. 455—on the medical virtues of the magnet, XX. 414—on surgery, 813.
 — governor of Gaul, II. 189; X. 2.
 ÆTNA, II. 189; XVII. 589; XV. 218; XX. 243; XXI. 605—height of, XVII. 642—exportation of snow from, VII. 101—electrical phenomena on, VIII. 583.
 — an ancient town, II. 199.
 Æetobates, genus of fishes, XII. 328—fossil, 342; XVII. 119.
 ÆTOLIA, II. 199—coins of, XVI. 370.
 Æetoplatea, genus of fishes, XII. 328.
 ÆFER (Domitius), Roman orator, II. 200.
 ÆFFA, an African weight, II. 200.
 ÆFFECTION, II. 200; XIV. 579; XIX. 117—Aristotle on, III. 561—on the affections which may be the basis of beauty, IV. 542.
 ÆFFERERS, in law, II. 200.
 ÆFFETTUOSO, in music, II. 200.
 ÆFFIANCE, in law, II. 200.
 ÆFFIDAVIT, II. 200.
 ÆFFILIATION, II. 200; XIV. 426.
 ÆFFINITY, in law, II. 200—chemical, 200; 140; VI. 440—of languages, XIII. 194.
 ÆFFIRMATION, in logic, II. 200; XIII. 592, 594.
 ÆFFIRMATIVE, in grammar, II. 201.
 ÆFFIX, II. 201.
 ÆFFLATUS, II. 201.
 Afonso (Dom.), princes and kings of Portugal so named, XVIII. 380, 381.
 ÆFFORESTING, II. 201.
 ÆFFRAY, in law, II. 201.
 ÆFFRONTÉE, in heraldry, II. 201.
 ÆFFUSION, II. 201.
 ÆFGHANISTAN, II. 201; III. 733.
 Afghans, their war with the Mahrattas, XI. 480; with the British in 1839, V. 667; XI. 509—their language, XIII. 207, 208—their conquest of Persia, XVII. 439.
 AFUM, a city of Anatolia, II. 209.
 AFORT, village near Paris, II. 209.
 AFRAGOLA, a Neapolitan town, II. 209.
 AFRANIUS (Lucius), a Latin poet, II. 209.

AFR—AGA

AFRICA, II. 209—America probably in part peopled from, 695—ants in, III. 263—Clapperton's discoveries in, VI. 752—complexion of the natives of, VII. 223, 224—British colonies in, 147—cotton manufacture in the interior of, 448—love of dancing in, 644—trade with England, VIII. 732, 733—languages of, XIII. 199, 202, 218, 225; XVII. 535—ethnology of, IX. 351—ancient circumnavigation of, X. 461—unexplored regions in, 476—portions of known to the ancients, 464—snowy mountains in, 477—metallic produce of, XV. 248; XVIII. 461—recent discoveries in, X. 477, 478, 479—extent of its coast line, XVII. 585—mean elevation of the surface of, 590—mountain system of, 595, 599—height of its mountains, 644—deserts of, 614—flora of, V. 228; XVII. 628, 629—mammalia of, 631, 632—birds, 634—insects, IX. 65—Sebastian of Portugal's expedition against, XVIII. 383—as a receptacle for convicts, 576—reptiles of, XVII. 634; XIX. 31, 35, 52, 53—course of the rivers of, 181—suicide in, XX. 799—sugar-cane, 798—slave-trade, 320—volcanoes, XXI. 603—imports of wool from, 911; prices of, 913—wines of, 886; Pliny's opinion of them, 882—missions to, 422; XV. 271, 276—maps of, II. Plate. See Nile, Niger, &c.
 African Association, II. 210; XVI. 265.
 — Company, XII. 818.
 — Institution, XX. 324.
 AFRICANUS (John Leo), II. 230. See Leo.
 — (SEX. JULIUS), II. 230.
 — (Scipio). See Scipio.
 AFRIQUE, St. a French town, II. 230.
 AFSLAGERS, II. 230.
 AFT, a sea term, II. 230.
 AFTER-GUARD, II. 230.
 AFTERMATH, in husbandry, II. 230.
 AFWESTAD, a town of Sweden, II. 230.
 Afzelius (A.), his work on insects, IX. 11.
 — Swedish poet, XIX. 700.
 AGA, II. 230.
 Aga Muhammad Khan, XVII. 441.
 AGADIR, a sea-port in Morocco, II. 230.
 AGALMATA, in antiquity, II. 230.
 Agalmatolite, mineral, XV. 84.
 Agama, genus of reptiles, XIX. 31.
 Agamæ or Agamians, family of reptiles, XIX. 31.
 AGAMEMNON, II. 230—character of, XVIII. 101.
 AGANIPPE, II. 230.
 AGAPE, love-feast, II. 230.
 AGAPETÆ, II. 230.
 AGAPETUS, II. 231.
 AGARD (Arthur), antiquary, II. 231.
 Agardh, on the physiology of plants, V. 71—his division of Algæ, V. 218.
 AGARIC MINERAL, II. 231.
 AGARICUS, genus of fungi, II. 231; V. 217, 142, 146—luminosity of, 169. See Mushrooms.
 Agarista, genus of insects, IX. 209.
 AGASIAS, ancient sculptor, II. 231.
 Agassiz (M.), on certain families of animals, III. 211—on glaciers, X. 636, 637, 640—his arrangement of fishes according to their scales, XII. 216, 332; XVII. 640—on fishes, 228, 236, 243 *et seq.*—his works on recent and fossil fishes, XII. 332—works on the mollusca, XV. 327—on the echini, XXI. 989, 990.
 — (L.), his work on insect embryology, IX. 23.
 AGATE, II. 231; XV. 69—moss-agates, II. 232—jasp and opal agates, *ib.*—its distinction from calcedony, VI. 67—optical properties of, XVI. 647, 648—agate-ware, XVIII. 433—as a plate for the knife-edge of pendulums, XVII. 383.
 AGATHARCHUS, a Greek painter, II. 232.
 AGATHARCIDES, II. 232.
 AGATHERMUS, II. 232.
 AGATHIAS, II. 232.
 Agathidium, genus of insects, IX. 151.
 Agathis, genus of insects, IX. 188.
 AGATHO, a Greek poet, II. 232.

AGA—AGO

AGATHOCLES, II. 232; XX. 900—his wars with the Carthaginians, VI. 284-5—his invasion of Africa, 284.
 AGATHYRNA, a town of Sicily, II. 232.
 AGAVE, a genus of plants, II. 232; V. 212—A. Americana, in Portugal, XVIII. 395.
 AGBARUS, II. 232. See Abgar.
 AGDE, a city of France, II. 232.
 AGE, II. 232—of the globe, *ib.*—of man, 233—of animals, 234—of plants, 234—of the antediluvians, III. 264—old age, XIV. 425—its influence in predisposing to insanity, 536—its influence on health, XIX. 607.
 AGEDA, a synod of Jewish doctors, II. 235.
 AGELA, in antiquity, II. 235.
 AGELADAS, a statuary of Argos, II. 235; XIX. 855.
 AGELNOTH, archbishop of Canterbury, II. 235.
 AGEMA, II. 235.
 AGEN, in France, II. 235—fall of meteorolites near, XIV. 630.
 AGENDA, II. 235.
 Ageneiosus, genus of fishes, XII. 262.
 AGENHINE, II. 235.
 AGENOIS, in France, II. 236.
 AGENT, II. 236.
 AGER, II. 237—A. Romanus, XIX. 306—A. peregrinus, *ib.*
 AGER PICENUS, an Italian territory, II. 237.
 AGESILAUS, II. 237; XX. 502; XXI. 178.
 AGGER, an ancient fortification, II. 238.
 AGGERHUUS, a province of Norway, II. 238.
 AGGLUTINANTS, in pharmacy, II. 238.
 Agglutinate languages, XIII. 194.
 Aggregata, tribe of mollusca, XV. 330.
 AGGREGATION, in physics, II. 238.
 Agha Muhammad Khan, king of Persia, XVII. 441.
 AGHORI, II. 238.
 AGHRIM, in Galway, II. 238—battle of, XII. 491.
 AGINCOURT, a French village, II. 238—battle of, *ib.*; VIII. 688; X. 22—archers at, III. 425.
 — on the history of art, XVII. 58.
 AGIO, in commerce, II. 239.
 Agionates, genus of fishes, XII. 247.
 AGIOSYMANDRUM, II. 239.
 AGIS, kings of Sparta, II. 239; IV. 206 *et seq.*; XX. 502.
 — a Greek poet of Argos, II. 240.
 AGISTMENT, in law, II. 240—tithe of, *ib.*
 AGISTOR, a forest officer, II. 240.
 AGITATION, II. 240—in politics, *ib.*
 AGITATOR, II. 240—agitators, *ib.*
 AGLAIA, one of the Graces, II. 240; X. 741.
 Aglaope, genus of insects, IX. 210.
 AGLAPHON, a Greek painter, II. 240.
 AGLAR, II. 240. See Aquileja.
 Aglaura, genus of annelides, XI. 298.
 Aglaurium, in ancient Athens, IV. 163.
 Aglia, genus of insects, IX. 212.
 AGLIE, a town of Piedmont, II. 240.
 AGLIONBY (John), an English divine, II. 240.
 Aglossa, genus of insects, IX. 218.
 AGMEN, in antiquity, II. 240.
 Agmondesham, town in Buckinghamshire, II. 714.
 AGNANO (Lago d'), lake near Naples, II. 240; XX. 239.
 AGNATE, in law, II. 241.
 AGNEL, old French coin, II. 241.
 AGNES (St), village in Cornwall, II. 241.
 — one of the Scilly islands, II. 241.
 AGNESI (Maria Gaetana), II. 241; IX. 677.
 AGNOETÆ, ancient heretics, II. 242.
 AGNOMEN, II. 242.
 AGNONE, a Neapolitan city, II. 242.
 Agnostus, trilobites, XVII. 102.
 AGNUS DEI, II. 242.
 AGOARD, archbishop of Lyons, II. 242.
 AGON, II. 242.
 AGONALLA, II. 242.
 AGONALIS CIRCUS, a street in Rome, II. 242; VI. 734.

AGO—AGR

AGONISMA, II. 242.
 AGONISTARCHA, II. 242.
 AGONISTICI, II. 242.
 AGONIUM, II. 242.
 AGONOTHEA, II. 242.
 Agonum, genus of insects, IX. 94.
 AGONYCLITÆ, II. 243.
 AGORA, II. 243; IV. 162.
 AGORACRITUS, a Greek sculptor, II. 243.
 AGOREUS, II. 243.
 AGORANOMI, II. 243.
 AGORDO, town in Austrian Italy, II. 243.
 Agostin de Musis, engraver, VIII. 800.
 AGOSTINI (Lionardo), antiquary, II. 243.
 AGOSTINO, and Angelo (da Siena), II. 243.
 — (PAOLO), II. 243.
 Agouti, in zoology, XIV. 189.
 Agows, people of Abyssinia, II. 56.
 Agra, mysteries celebrated at, XV. 753.
 AGRA PROVINCES, II. 243; XVI. 301.
 — CITY, II. 244—mausoleum at, XI. 477, and *n.* 1—sepooy insurrection at, XVI. 309.
 AGRAM, a palatinate in Croatia, II. 244.
 AGRARIAN LAWS, II. 245; VI. 717; XIX. 303—agrarian agitation of the Gracchi, 317—Niebuhr on, XVI. 261—agrarian region of vegetation, V. 230.
 Agraulium, in ancient Athens, IV. 163.
 AGREDA, a district and town in Spain, II. 247.
 AGRIA, a town in Upper Hungary, II. 247. See Erlau.
 AGRICOLA (Cnæus Julius), II. 247—his conquests in Britain, V. 378—XIX. 340, 741—Tacitus' life of, XXI. 3—his subjugation of the Brigantes, 956.
 — (GEORGE), a German physician, II. 248.
 — (JOHN), founder of the Antinomians, II. 248; III. 273.
 — (RODOLPHUS), II. 248.
 AGRICULTURE, II. 248—extraordinary demand for books relating to, in the reign of James I., I. 39, *n.* 1—culture of the willow, IV. 489—establishment of the Board of, V. 549—agricultural distress of 1821 and 1822, 633; of 1823, 636—deficient crops of 1826, 647—effects of the cotton manufacture on, VII. 454—improved by the crusades, 534—improvement of since 1815, 391—a rational system must be founded on chemistry, VI. 523—agricultural drainage, VIII. 130—insects injurious to agricultural produce, IX. 106, 125, 141, 150, 159, 171, 226—disliked by the Greeks, XI. 15—combination of, with manufacturing employments, XIV. 282—a healthy occupation, 442—employment of capital in, XVIII. 235—distinction between agricultural and manufacturing industry, 246—manufactures necessary for the improvement of, 236—profits in, 252—Society for the Protection of, 642—Ricardo on protection to, XIX. 155—taxes on the rent of land, XXI. 43—turnip-fly, IX. 151; XXI. 549—agricultural statistics of Scotland, XIX. 796, 797, 798—professorship of, in University of Edinburgh, 485—steam-engines for, XXI. 614—Arthur Young's writings on, 960. See Agricultural Chemistry, Draining, Guano, Irrigation, Manures, Corn-laws, Dairy, Veterinary Science, Wheat, &c. Agriculture in Afghanistan, II. 207—Aberdeenshire, 33—Abyssinia, 55—Antrim, III. 285—Arragon, 393—Argyleshire, 526—Armagh, 614—Asia, 737—Australia, IV. 280, 296—Austria, 313—Ayrshire, 333—Baden, 360—Banffshire, 413—Bedfordshire, 568—Belgium, 622, 624—Bengal, 649—Berkshire, 666—Berwickshire, 679—Brazil, V. 294—Breconshire, 312—Buckinghamshire, 722—Buenos-Ayres, 726—Bute, VI. 26—Caermarthen, 53—Caernarvonshire, 54—Caithness, 62—Cambridgeshire, 115—Canada, 138, 141, 146—Canary islands, 163—Cardigan-shire, 234—Carlisle, 240—Cavan, 348—Ceylon, 399—Cheshire, 529—Chile, 550—China, 588—Clackmannanshire, 749

AGR—AGR

—Clare, 755—Cork, VII. 372—Cornwall, 407—Cumberland, 576—Denbighshire, 735—Denmark, 747—Devonshire, 763—Donegal, VIII. 105—Dorsetshire, 112—Down, 123—Dublin, 216—Dumbartonshire, 236—Dumfriesshire, 237—Durham, 266—Edinburghshire, 409—England, 722—Egypt, 427, 428, 516—Essex, IX. 335—Fermanagh, 515—Fife, 544—Forfarshire, 783—France, X. 245—Galway, 390—Germany, 588—Glamorganshire, 642—Gloucestershire, 680—Greece, XI. 15—Haddingtonshire, 178; II. 368—Hampshire, XI. 203—Hanover, 212—Hebrides, 278—Herefordshire, 349—Hertfordshire, 359—Hindustan, 452—Holland, 582—Huntingdonshire, XII. 48—Inverness-shire, 439—Ireland, 511 *et seq.*—Italy, 639—Japan, 693—Java, 705—Kent, XIII. 66—Kentucky, 69—Kerry, 74—Kildare, 82—Kilkenny, 85—Kincardineshire, 89—King's County, 91, 92—Kinross-shire, 95—Kirkcudbrightshire, 99—Lanarkshire, 175—Lapland, 237—Leicestershire, 320—Lettrim, 328—Limerick, 488—Lincolnshire, 491—Llithgowshire, 497—Lombardy, 648—Londonderry, 681—Longford, 684—Louisiana, 702—Louth, 702—Madagascar, 792—Madeiras, 797—Maryland, XIV. 330—Isle of Man, 244—Meath, 376—Mexico, 716—Middlesex, 808—Monaghan, XV. 409—Moray, 576—Munster, 687—Monmouth, 498—New Brunswick, XVI. 163—New Jersey, 175—New Hampshire, 173—New York, 219—Norfolk, 289—New Zealand, 233—Northumberland, 300—Norway, 324—Nova Scotia 344—Oregon, 706—Orkney, 721—Odessa, 406—Ohio, 490—Oxfordshire, XVII. 36—Palestine, 191—Papal States, 242—Pembrokeshire, 374—Pennsylvania, 396—Perthshire, 458—Poland, XVIII. 158—Portugal, 397—Prince Edward Island, 518—Prussia, 665, 666—Queen's County, 729—Radnorshire, 748—Renfrewshire, XIX. 8—Roscommon, 421—Ross-shire, 426—Roxburghshire, 455—Russia, 519, 544—Rutlandshire, 555—Savoy, 675—Saxony, 684—Scotland, 796 *et seq.*—Shropshire, XX. 229—The Two Sicilies, 247—Selkirkshire, 41—Servia, 61—Sligo, 330—Somersetshire, 410—Spain, 489—Staffordshire, 530—Stirlingshire, 703—Suffolk, 790—Sussex, 839—Sutherland, 842—Sweden, 861—Switzerland, 889—Tipton, XXI. 287—Tuscany, 394—Tyne, 408—United States, 425; II. 706—Virginia, XXI. 598—Waterford, 770—Westmeath, 839—Wexford, 847—Worcestershire, 928—Westmoreland, 842—Westphalia, 844—Wicklow, 859—Wigtownshire, 863—Wiltshire, 869—Wisconsin, 893—Wurtemberg, 938—Yorkshire, 958. See the geographical articles generally.
 AGRICULTURAL CHEMISTRY, II. 373; VI. 523—Davy on, VII. 671.
 Agricultural College (Royal), X. 680.
 — labourers, health of, XIV. 442.
 — museum, Stirling, XX. 701.
 AGRIGENTUM, II. 421; X. 632; VII. 185—taken by the Romans, VI. 287; by the Carthaginians, 289—destroyed by Carthago, *ib.*—temple of Jupiter at, III. 465—coins of, XVI. 365.
 Agrion, genus of insects, IX. 176.
 AGRIONIA, festivals in honour of Bacchus, II. 421.
 AGRIOPHAGI, II. 421.
 AGRIOPUS, a genus of fishes, II. 421; XII. 283.
 AGRIPPA (Cornelius), II. 421.
 — (HEROD), II. 421; XII. 773.
 — II., king of Chalcis, II. 422.
 — (MARCUS VIPSANIUS), II. 422; XIX. 333—Rome improved by, 858.
 AGRIPPINA, II. 423; XIX. 337; XX. 45.
 — daughter of Germanicus, II. 423.
 — COLONIA UBIORUM, II. 423; VII. 133.
 Agrocinus, genus of insects, IX. 145.

AGR—AIL

Agromyza, genus of insects, IX. 257.
 AGRONOMI, ancient rural police, II. 423.
 AGROSTIS, a genus of grasses, II. 423.
 AGROTERAS THUSIA, an Athenian festival, II. 423.
 AGR. See Dax.
 Agtelek cave, in Gümör, XII. 10.
 Aguacate, gold mines of, VII. 424.
 AGUAS CALIENTES, a Mexican town, II. 423.
 AGUDO, town in Spain, II. 424.
 AGUE, II. 424; XII. 436.
 AGUEDA, a Spanish river, II. 424.
 — (Santa), Spanish village, II. 424.
 AGUESSEAU (Henri Francois d'), II. 424.
 AGUILAR de la Frontera, II. 425.
 AGUILAS (San Juan de las), Spanish seaport, II. 425.
 AGUILANEUF, II. 425.
 AGUILLON (Francis), II. 425.
 AGUIMES, a town in Great Canary Island, II. 425.
 AGUIRRE (Joseph Saenz d'), II. 425.
 AGULHAS (Cape), II. 425, 212.
 AGURAH, a Jewish coin, II. 425.
 AGUSADURA, II. 425.
 AGYEI, II. 426.
 AGYNIANI, II. 426.
 AGYRIUM, an ancient Sicilian town, II. 426.
 AGYRTÆ, II. 426.
 AHAB, king of Israel, II. 426.
 AHALA, II. 426.
 Aham, Dutch liquid measure, II. 3.
 AHANTA, a district in Africa, II. 426.
 AHASUERUS, II. 426; IX. 338; XVII. 434.
 AHAUS, II. 426.
 AHAZ, king of Judah, II. 426.
 AHAZIAH, II. 426, 427.
 A-HEAD, a sea term, II. 427.
 AHENOBARBUS, II. 427.
 AHIGAL, a Spanish town, II. 427.
 AHJAH, II. 427.
 AHIMELECH, II. 427.
 AHITHOPHEL, II. 427.
 AHJOLI, a city in Silistria, II. 427.
 Ahmad, founder of the Benec-Tooloon dynasty in Egypt, VIII. 475.
 — rebel, VIII. 494.
 AHMEDABAD, II. 427. See Amedabad.
 AHMEDPOORA, towns in Hindustan, II. 427.
 Ahmed-Shah, XI. 481—tomb of, VI. 168.
 Ahmet, I., II., III., sultans, XXI. 369, 370, 376.
 Ahnaun, kind of wood, XX. 173.
 Ahrens (G. F.), his work on insects, IX. 7.
 — (A.), his works on insects, IX. 11.
 Ahrian, group of rocks, XV. 199.
 Ahriman, XXI. 1009.
 AHRWEILER, a Prussian circle, II. 427.
 A-HULL, a naval term, II. 427.
 AHUYS, a town of Sweden, II. 427.
 AI, a town in Judea, II. 427.
 Ai, three-toed sloth, XIV. 190, 121, *n.*; IV. 260—number of its cervical vertebrae, III. 75—its stomach, 108—intestines, 110—bloodvessels, 112.
 AIBAR, a Spanish town, II. 428.
 AIDAN, II. 428.
 — (St), a Scottish bishop, II. 428.
 AID-DE-CAMP, II. 428—naval aides-de-camp to the queen, XVI. 117.
 AIDIS, II. 428.
 Aiglasmodes, genus of zoophytes, XXI. 1006.
 AIGLE, II. 428.
 — L', a city of France, II. 428—shower of stones near, XIV. 631.
 AIGUE PERSE, a town of France, II. 428.
 AIGUES MORTES, a town of France, II. 428.
 AIGUILLON, a town of France, II. 428.
 AIGUISCE, in heraldry, II. 428.
 AIKEN (Dr John), II. 428; IV. 431—on political ballads, IV. 396.
 Aikenhead (Thomas), condemned for blasphemy, IV. 754.
 Aikin (Dr), on Gilbert Wakefield, XXI. 682.
 — (Lucy) on the magnanimity of Queen Elizabeth, VIII. 635, *n.*
 AIKMAN (William), painter, II. 428.
 AILANA, II. 429. See Akabah.

AIL—AIR

Allanto tree, XVII. 762.
 AILESBUURY, II. 429. See Aylesbury.
 Allia, genus of fishes, XII. 263.
 AILMER, II. 429.
 AILRED, historian, II. 429.
 AILSA, II. 429.
 Allurus, genus of mammalia, XIV. 154.
 Alm, in shooting, XX. 215.
 Aime's artificial magnets, XIV. 76.
 AIN, a department in France, II. 429.
 Ainslie (Dr), on the Japanese, XII. 690.
 AINSWORTH, in Lancashire, II. 429.
 — (Dr HENRY), a divine, II. 429.
 — (ROBERT), author of a Latin Dictionary, II. 429.
 AINTAB, town in Syria, II. 430.
 AIR, II. 430—fixed air, IV. 737—changes it undergoes by respiration, XVII. 662—extent to which it is vitiated by different illuminating agents, XIX. 615—specific heat of, XX. 561—source of, in ventilation, XXI. 540—ingress and egress of, in ventilation, ib.—equalization of, in ventilation, ib.—amount of, necessary for ventilation, ib.—purity and temperature of, ib.—moisture of, affects ventilation, 541—nature of heating power applied to, ib.—steam apparatus used to heat, ib.—source of movement for the, ib.—varieties of ventilation of, 542. See Atmosphere, Meteorology, Pneumatics.
 — in painting, II. 430—music, ib.
 — hot, for heating apartments, XIX. 614.
 Air-bladder of fishes, XII. 225, 284; XVIII. 51.
 Air-cavities in plants, V. 73.
 Air-engines, XX. 619.
 Air-furnace, X. 355.
 AIR-GUN, II. 430; XVII. 516.
 AIR-JACKET, II. 430.
 AIR-PIPES, II. 430.
 AIR-PUMP, II. 430; XVIII. 32—invention of, IV. 451—Cavallo on the, VI. 345—double-acting, XII. 178—of a steam-engine, XX. 578, 655, 668.
 AIR-SHAFTS, II. 430.
 Air-thermometer, IV. 456; XXI. 221.
 AIR-THREADS, or gossamer, II. 430.
 AIR-VESSELS, in plants and animals, II. 430; XVII. 653.
 AIRANI, sect of Arians, II. 430.
 AIRDRIE, town in Lanarkshire, II. 430; XIII. 176.
 AIRE, two towns in France, II. 430.
 — river in Yorkshire, II. 430; XXI. 957—bridge over, XII. 609; XXI. 956.
 Airmoss, skirmish at, V. 432.
 AIRY, or Aery, eagle's nest, II. 430.
 — (George Biddell), astronomer-royal, I. 849—on tides and waves, 818; XVII. 582—his account of Laplace's dynamical theory, I. 817—on the perturbations by Venus of the earth's motion, 825—his physical and astronomical labours, 849—his introduction of galvanism in recording observations, 850—his magnetic and meteorological observations, ib.—his formula for M. Foucault's pendulum experiment, 855—on Russell's theory of waves, 889—on the rainbow, 899—on the phenomena of quartz, 910—on the undulatory theory of light, 917—application of the theory of magnetism to ships' compasses, 990; XX. 27—his proceedings at the Greenwich and Cambridge Observatories, III. 816, 817—his observations on the solar disk, IV. 88—on the lunar orbit, 89—on the perturbations of Venus and the earth, 90; I. 825—on the satellites of Jupiter, IV. 91—on the orbit of comets, 94—on pendulums and escapements, VII. 9—his improvements in the theory of fluids, XII. 76—means taken by, to determine the longitude of Valentia, XIII. 687, 688—on optics, XVI. 547, 605, and *n.* 1, 678, 679—his spherocylindrical spectacles, 567—on eye-pieces for telescopes, XXI. 124—his silvered specula, 132—his zenith sector, 335—his figure of the earth, *ib.* *n.*

AIS—ALA

AISLE, in architecture, II. 430.
 AISNE, a department in France, II. 430.
 Aitken (James), incendiary, V. 504.
 Aitken's blast-furnace, X. 359.
 AITOCZU, river in Lesser Asia, II. 430.
 AITON (William), botanist, II. 430—his Hortus Kewensis, VIII. 201.
 AIUS LOCUTUS, Roman deity, II. 431.
 AIX, city and arrondissement of France, II. 431—amber found at, 656—population, X. 277—academy of, XXI. 491.
 — an island, II. 431—river, *ib.*
 AIX-LA-CHAPELLE, a district and town in Prussia, II. 431; XIX. 145—treaty of, V. 462; XII. 653—congress of, in 1818, X. 179; XXI. 743.
 AJACCIO, in Corsica, II. 431; VII. 417.
 AJALON, II. 431.
 AJAN, country of Africa, II. 432.
 Ajanæa, genus of zoophytes, XXI. 1006.
 AJAX, II. 432.
 AJMERE, II. 432—temples at, XI. 477.
 AJOFERIN, a town of Spain, II. 433.
 AKABAH, Gulf of, II. 433; XVIII. 817.
 Akassa, river of Morocco, XVI. 392.
 AKEN, a Prussian town, II. 434.
 AKENSIDE (Mark), II. 434—his poetry, XVIII. 124.
 Akera bullata, teeth of, XV. 373.
 AKERBLAD (Jan David), II. 435—on the Rosetta stone, XI. 378-9.
 AKERMAN, in Russia, II. 435.
 AKHALIES, religious warriors of the Sikhs, II. 435.
 AKHALZIKE, II. 435.
 AKHALZIKH, a city of Georgia, II. 435—attack on, by the Russians, XIX. 496.
 AKHBAR, or Acbar, Mogul emperor of Hindustan, II. 435, 53.
 AKHISSAR, II. 435.
 AKHMETSCHEV, II. 435; VII. 505.
 AKHTIAR, II. 435; VII. 505.
 AKIBA, rabbi, II. 435.
 Akis, genus of insects, IX. 129.
 AKOND, II. 435.
 AKYAB, II. 435.
 AL, Arabic particle, II. 436.
 AL or ALD, a Saxon prefix, II. 436.
 ALA, II. 436.
 ALÆ, II. 436.
 ALABAMA, II. 436; XXI. 419—debt of, 428—newspapers of, XVI. 195—production of wine in, XXI. 888.
 Alabandine, mineral, XV. 121.
 ALABARCHA, II. 436.
 ALABASTER (William), II. 436.
 — a vase, or liquid measure, II. 437.
 — mineral, II. 437; XI. 172; XV. 96, 148—origin of the name, 148, *n.*—sculptured slabs of, at Nineveh, XVI. 276, 277—photography on, XVII. 551.
 Alabastrine photographs, XVII. 552.
 ALABASTRUM DENDROIDE, II. 437.
 ALACRANES, II. 437.
 ALADINISTS, a Mahometan sect, II. 437.
 ALADSCHAHISSAR, II. 437.
 ALADULIA, an Asiatic province of Turkey, II. 437.
 ALAEJOS, a Spanish town, II. 437.
 ALAGON, a Spanish town and river, II. 437.
 ALAIN (Chartier), II. 437.
 ALAIS, in France, II. 437.
 ALAJAR, a Spanish town, II. 437.
 ALAMAGAN, island, II. 437.
 ALAMANNI (Luigi), II. 437.
 ALAMOS (Balthasar), II. 438.
 ALAN (Cardinal William), II. 438.
 ALAND, archipelago of, II. 438; IV. 403; XIX. 552.
 Alangiaceæ, nat. order of plants, V. 192.
 Alani, X. 577; XII. 26—their irruption into Spain, XX. 459.
 ALANJAE, a Spanish town, II. 438.
 ALANT, in heraldry, II. 438.
 AL ARAF, II. 438.
 Alaria, fossil mollusks, XVII. 109.
 Alariaceæ, nat. family of plants, V. 195.
 ALARIC I., II. 438—his invasion of Greece, IV. 173—Rome occupied by, XIX. 363.
 — II., compendium of laws prepared under, VI. 743.
 ALARM, II. 439—bell, *ib.*
 ALARO, a town in Minorca, II. 439.

ALA—ALB

Alarum clocks, VII. 17.
 ALASCANI, an anti-Lutheran sect, II. 439.
 ALASCO (John), II. 439.
 ALA-SHER, II. 439; XVII. 511.
 ALASHKA, II. 439.
 ALASSIO, II. 439.
 ALASSONA, a Turkish town, II. 439.
 ALATAMAH, river in North America, II. 439.
 ALATRIUM, a town in Italy, II. 439.
 ALAUDA, genus of birds, II. 439; XVI. 759—one of Cæsar's legions so named, II. 439.
 Alausa, genus of fishes, XII. 237.
 ALAUTA, a Turkish river, II. 439.
 ALAVA, in Spain, II. 439.
 ALAY, II. 440.
 ALAYOR, a Spanish town, II. 440.
 ALB, II. 440.
 ALBA, in Piedmont, II. 440.
 — an Italian city, II. 440.
 — DE TORMES, in Spain, II. 440.
 — LONGA, in Latium, II. 440.
 — Duke of, XI. 565, 566 *et seq.*
 ALBACETE, a Spanish province, II. 440.
 ALBAHURIM, II. 440.
 ALBAN (St), protomartyr of Britain, II. 440.
 ALBANENSES, II. 440. See Albigenes.
 ALBANI, II. 440; VI. 74.
 — (CARDINAL G. F.), Pope, II. 440.
 — (FRANCESCO), Italian painter, II. 441; XVII. 73.
 ALBANIA, II. 441; XI. 13—invaded by a Turkish army, 23—inhabitants of, IX. 351, 388—language, 390; XIII. 215—vineyards of, XXI. 886.
 — in Asia, II. 444.
 Albanians in Greece, XI. 14, 15—Ilyria, XII. 363—in Turkey, XXI. 378.
 ALBANO, city, II. 444—lake, *ib.*
 — Neapolitan town, II. 444.
 — painter, XVII. 73.
 ALBANS (St), II. 444; XI. 359—battle of, VIII. 690—early printing at, XVIII. 538.
 — (Hugh de), painter, XVII. 77, *n.* 1.
 ALBANUS MONS, II. 444.
 ALBANY, town in New York, II. 444; XVI. 217, 220—railway from, XVI. 220.
 — station of Hudson's Bay Company, II. 444.
 — district at Cape of Good Hope, II. 444; X. 713.
 — (Dukes of), regents of Scotland, XIX. 757, 767.
 — Earl of, XIX. 760, 761.
 ALBARIUM OPUS, II. 445.
 ALBARRACIN, in Spain, II. 444.
 ALBATEGNI, Arabic prince and astronomer, II. 445; III. 794, 795.
 ALBATI EQUI, II. 445.
 ALBATROSS, II. 445; XVI. 812; XVII. 633.
 ALBAYDA, in Spain, II. 445.
 ALBAZIN, town in Greater Tartary, II. 445.
 ALBEMARLE, II. 445. See Aumale.
 — a county of Virginia, II. 445.
 — Sound, II. 445.
 — island, X. 367.
 — (George), Duke of. See Monk.
 ALBENGA, an Italian seaport, II. 445.
 ALBERIQUE, in Spain, II. 445.
 ALBERONI (Julius), II. 445.
 ALBERT, II. 445.
 — Margrave of Brandenburg, II. 445.
 — of Saxony, on aeronautics, II. 167.
 — (Prince-Consort) of Saxe Coburg-Gotha, his marriage with the Queen, V. 667—sum voted to, *ib.*
 — of Mecklenburg, king of Sweden, XX. 845.
 — Emperor of Austria, XX. 884.
 — (Charles), XII. 657, 658.
 ALBERTI (Leon Battista), II. 445; III. 451.
 — on medical jurisprudence, XIV. 423.
 Albertia, genus of entozoa, XXI. 978.
 ALBERTUS MAGNUS, II. 445; XIV. 458—his pretensions to the art of flying, II. 166—on sal-ammoniac, 720—his history of animals, XIV. 124.

ALB—ALC

ALBESTA, II. 446.
 ALBI, in France, II. 446.
 ALBIGENSES, II. 446; persecution of, XI. 616; XII. 386, 387; XXI. 508.
 ALBIGEOIS (L.), in France, II. 446.
 Albin (Eleazar), his work on insects, IX. 4—his work on spiders, III. 390—on birds, XVI. 726.
 ALBINI, II. 447.
 Albinism in animals, XIV. 134.
 ALBINOS, II. 447.
 ALBINOVANUS (C. Pedro), II. 448.
 ALBINUS, II. 448.
 — (BERNHARD SIEGFRED), physician, II. 448—his anatomical labours, 764, 766—his arrangement of the muscles, III. 38.
 — (CLODIUS), II. 448.
 ALBION, II. 448; V. 372.
 — (New), II. 448.
 — printing-press, XVIII. 558.
 Albione, genus of annelides, XI. 307.
 ALBIREO, star, II. 449.
 ALBIS, ancient name of the Elbe, II. 449.
 ALBITE, a species of felspar, II. 449; XV. 71.
 ALBOGALERUS, II. 449.
 ALBOIN, king of the Lombards, II. 449; XII. 641; XIII. 638.
 AL BORAK, II. 449.
 ALBORAN, island, II. 449.
 ALBOX, a town in Spain, II. 449.
 Albrecht (Achilles), elector of Brandenburg, XVIII. 647.
 ALBRECHTSBERGER (J. George), musician, II. 449.
 ALBRIC, II. 449.
 Albucasis, physician, XIV. 457—his knowledge of surgery, XX. 815, 816.
 ALBUERA, II. 449—battle of, V. 609.
 ALBUFEIRA, a Portuguese town, II. 449.
 ALBUFERA de Valencia, lake, II. 449.
 ALBUM, II. 449.
 — græcum, XVI. 460.
 ALBUMAZAR, Arabian astronomer, II. 449.
 ALBUMEN, II. 449; XVII. 654; XIX. 610.
 — (animal), IX. 757—its use in clarifying, VI. 755—its qualities as an aliment, VIII. 19—of eggs, VIII. 418—albumen process in photography, XVII. 546—albuminous degeneration, 690, 696.
 — (vegetable), II. 381; IX. 757; V. 140; VI. 519.
 Albuminous seed, V. 140.
 ALBUQUERQUE, a Spanish town, II. 449.
 — (ALFONSO), II. 449.
 Alburj mountains, XVII. 420—coal in, 422.
 ALBURN, II. 449.
 ALBURNUM of trees, II. 449; V. 81; XXI. 267.
 Alca, genus of birds, XVI. 810.
 ALCÆUS, Grecian poet, II. 449.
 — comic poet, II. 450.
 — epigrammatic poet, II. 450.
 ALCAICS, verse and ode, II. 450.
 ALCAID or Alcalde, II. 450; XX. 467.
 ALCALA DE GUADIRA, II. 450—de Henares—de los Gazules—la Real, Spanish towns, *ib.*
 — Hebrew bible, IV. 697; II. 450; XXI. 951.
 — university of, XIII. 805.
 ALCALY, or Alkali, II. 450. See Alkali.
 ALCAMENES, Athenian sculptor, II. 450.
 ALCAMO, a city of Sicily, II. 450.
 Alcan, VII. 315.
 ALCANIZ, a Spanish town, II. 450.
 ALCANNA, or Alkanna, II. 450.
 ALCANTARA, in Spain, II. 450—knights of, *ib.* 619.
 — in Brazil, XIV. 294.
 — river in Sicily, XX. 244.
 ALCARAZ, a city in Spain, II. 451.
 Alcartazas, cooling vessels, VII. 100.
 ALCAUDETE, a Spanish town, II. 451.
 ALCAVALA, a Spanish tax, II. 151.
 ALCAZAR de San Juan, II. 451.
 — DO SAL, II. 451.
 — KEBIR, II. 451.
 — (LUIS DE), Jesuit, II. 451.
 ALCEDO, genus of birds, II. 451; XVI. 772.

ALC—ALD

ALCEDO (Antonio de), II. 451.
 ALCESTER, II. 451; XXI. 738, 739.
 ALCESTIS, II. 451.
 Alcetas, king of Epirus, IX. 277.
 Alctre (John), his letter to Henry V. on ship-building, XX. 122.
 ALCHADEB, rabbi, II. 451.
 Alchemists, VI. 437—their notions on physical subjects, 448—first to explore new paths of science, *ib.*—their fancies respecting dew, VII. 766—names of the principal, II. 451—Sir I. Newton's study of their works, XVI. 208—their objects, II. 452—in Persia, XVII. 430.
 ALCHEMY, II. 451. See Alchemists.
 ALCIATI (Andrea), Italian jurist, II. 452.
 ALCIPIADES, II. 452; IV. 206, *n.* 2, 207 *et seq.*—his death and character, 209, *n.* 1—conduct of Socrates towards him, XX. 375—his respect for that philosopher, 378.
 ALCIDAMAS, II. 452.
 ALCIDES, II. 452.
 ALCINOUS, II. 452.
 Alcipoa, genus of annelides, XI. 298.
 ALCIFHRON, II. 452.
 ALCIRA, a Spanish town, II. 452.
 ALCMEON, II. 452.
 ALCMAER, a Dutch city, II. 452.
 ALCMAN, Greek lyric poet, II. 452.
 ALCMANIAN verse, II. 453.
 ALCMENA, II. 453.
 ALCOBAZA, a town of Portugal, II. 453.
 ALCOCK (John), bishop, II. 453.
 ALCOENTREE, a town of Portugal, II. 453.
 ALCOHOL, II. 453; VI. 506 *et seq.*; IX. 756, 760; VIII. 47; XIX. 611—boiling point of, VIII. 50—how to inflame it by electricity, 590—its vapour unlikely to supersede steam as a moving power, IX. 414—mode of freezing it, *ib.*—its specific gravity, II. 453; XII. 89—produced by the fermentation of wort in brewing, V. 329—its narcotic properties, XIV. 439—its effect on the nervous system, XVII. 699—in wine, XXI. 889, 890—in thermometers, 221.
 ALCOHOLIZATION, II. 453.
 ALCOR, star, II. 453.
 ALCORA, a town in Spain, II. 453.
 ALCORAN, II. 453—Marracci's edition of, XIV. 314. See Koran.
 — of the Cordeliers, II. 456.
 ALCOY, a Spanish city, II. 456.
 ALCUIN, II. 456, 61—his version of the Bible, IV. 701.
 Alcyonaria, zoophytes, XXI. 1004.
 ALCYONIA, zoophytes, II. 457.
 Alcyonidæ, zoophytes, XXI. 1004.
 ALCYONIUM STAGNUM, lake, II. 457.
 ALCYONIUS (Peter), II. 457.
 ALDBOROUGH, a town in Yorkshire, II. 457.
 ALDEBARAN, star, II. 457; IV. 79, 82.
 ALDEBURGH, a town in Suffolk, II. 457.
 ALDEGREVER (Heinrich), engraver, II. 457.
 Aldehyde, in chemistry, VI. 509.
 ALDER tree, II. 457; V. 208; XVII. 759, 765—strength of the wood, XX. 757, 758—as a timber tree, XXI. 278.
 — (Mr), his work on the mollusca, XV. 327.
 ALDERHOLM, island, II. 457.
 ALDERMAN, II. 457.
 ALDERNEY, II. 457—harbour of refuge at, XI. 222—breed of cattle, XII. 730—race of, XVII. 580.
 Aldershot, military camp at, XI. 204.
 Alderston Melon pit, XI. 733.
 ALDHelm (St), bishop, II. 458.
 ALDINE, II. 458; XIV. 292. See Aldus.
 ALDPORTE, II. 458.
 ALDRED, bishop, II. 458.
 ALDRICH (Dr Henry), English divine, II. 458.
 — (Robert), bishop, II. 459.
 Aldrisi, VIII. 411.
 ALDROVANDUS (Ulysses), II. 459—his work on insects, IX. 2—on animals, XIV. 124—his MSS., XIII. 413—on ornithology, XVI. 725.
 ALDSTON-MOOR, II. 459—lead mines of, VII. 577; XV. 243.

ALD—ALE

Aldus, his editions of the Greek classics, IV. 710; XVII. 522—his correction of the press, XVIII. 542. See Manuzio.
 ALE, II. 459; V. 332; IX. 759—ale-conner, II. 459—ale-silver, 560—brewing of, V. 318, 332—pale, or Indian, 332—home-brewed, 334—Scottish, *ib.*; XIX. 805—bitter, V. 333—quantity exported from United Kingdom, 335—its average specific gravity, XII. 89—of Nottingham, XVI. 339—of London, XIV. 809—ale-measures, XXI. 808—of Edinburgh, V. 334.
 ALEA, II. 460.
 ALEANDRO (Geromino), II. 460.
 ALECTO, II. 460; X. 352.
 — fossil animals, XVII. 98.
 ALECTORIA, II. 460.
 ALECTOROMANTIA, II. 460.
 Alectors, birds, XVI. 785.
 A-LEE, a sea term, II. 460.
 ALEGAR, II. 460.
 ALEIUS CAMPUS, II. 460.
 ALEMAN (Louis), archbishop, II. 460.
 — (Mateo), II. 460—his romance, XIX. 286.
 ALEMANNI, a German tribe, II. 460; X. 2, 576—their invasion of Italy, XIX. 349; of Helvetia, XX. 883.
 Alemannic language, X. 587.
 ALEMBERT (Jean le Rond d'), II. 460—his general survey of the various departments of human knowledge, founded on erroneous views, I. 1—his unsuccessful delineation of an encyclopedical tree, 3—quotation from, on his division of human knowledge, 3, 4—objections to this, 5, 6—his definition of poetry, 4, and *n.* 1—his identification of imagination with abstraction, 6—his diffidence in propounding his views, 7, *n.*—his encyclopedical tree only an amplification of Bacon's sketch, 7, 8—character of his preliminary discourse on the different branches of knowledge, 10—quotation from, on the bias of the mind from habits contracted in infancy, 64—his erroneous views on the necessary existence of space and time, 142, *n.*—his mathematical researches; character of his writings, 694—expanded the process of integration relative to *partial differences*, 716—discovery of the principle on which he framed his Treatise on Dynamics, 720; VIII. 364—sketch of his life and character, I. 720, *n.*—treated of hydrodynamics with his usual originality and depth, 724—on achromatic glasses, II. 93—his labours in astronomy, III. 809—his declaration about the election of an associate of the Academy of Sciences, I. 806—on the resolution of forces, VIII. 335—his connection with Diderot, 14—Condorcet's eulogy on, VII. 238—on the figure of the earth, IX. 552—on the motion of fluids, XII. 72—on imitative music, XV. 737—on the Provincial Letters of Pascal, XVII. 325, 330.
 ALEMBIC, II. 462.
 ALEMBROTH, II. 462.
 ALENÇON, in France, II. 462—lace, XIII. 142.
 ALENIO (Gulio), a Jesuit, II. 462.
 ALENQUER, a Portuguese town, II. 462.
 ALENTEJO, in Portugal, II. 462.
 Aleochara, genus of insects, IX. 104.
 Alepisaurus, genus of fishes, XII. 248, 213.
 Alepocephalidæ, family of fishes, XII. 255.
 Alepocephalus, genus of fishes, XII. 255.
 ALEPPO, II. 463—pachalic of, XX. 905—plagues in, XVII. 748, 749, 751—temperature, XX. 907—taken by Saladin, VIII. 481.
 ALES (Alexander), II. 463.
 ALESSANDRI (Alessandro), lawyer, II. 464.
 ALESSANDRIA, a city of Italy, II. 464.
 — a province of Piedmont, II. 464; XIX. 640.
 ALESSI (Galeazzo), architect, II. 464.
 Alestes, genus of fishes, XII. 246.

ALE—ALE

ALET, a town of France, II. 464.
 Aletes, kings of Corinth, VII. 367.
 ALEUROMANCY, II. 464.
 ALEUTIAN ISLANDS, II. 464; XIX. 552—height of mountains in, XVII. 646—volcanoes, 589, 590.
 ALEXANDER THE GREAT, II. 466—a poor judge of merit in painting, III. 281; XVII. 56—educated by Aristotle, III. 453—his army, 628—era of, VI. 672—enlarged the boundaries of geographical knowledge, X. 462; III. 696—Egypt under, VIII. 467—his expedition to India, XI. 478; III. 752—his birth, XIII. 764—military exploits and conquests, 766 *et seq.*—his death and character, 772—his will, 773—burial, 774—Græco-Macedonian empire under, XI. 542—change in the Greek coinage produced by, XVI. 355, 369—monarchy founded by, XV. 412—his invasion of Persia, XVII. 434—his rule in Syria, XX. 910—Tyre taken by, XXI. 405.
 — of Aphrodisias, II. 466.
 — of Hales, II. 466.
 — of Tralles, II. 466. See Trallianus.
 — Balas, II. 466.
 — JANNÆUS, II. 466.
 — SEVERUS, Roman Emperor, II. 466—reign of, XIX. 347.
 — V. (Pope), II. 467.
 — VI. (Pope), II. 467.
 — VII. (Pope), II. 467, 541.
 — St, bishop of Rome, II. 467.
 — I., king of Scotland, II. 467; XIX. 751.
 — II., king of Scotland, II. 467; XIX. 753.
 — III., king of Scotland, II. 467; XIX. 753.
 — (NOEL), II. 467.
 — (WILLIAM), earl of Stirling, II. 468; IV. 469.
 — (PAULOVICH), Emperor of Russia, II. 468—reign of, XIX. 491—Petersburg improved by, XVII. 487.
 — II., Emperor of Russia, XIX. 507.
 — of Phææ, XXI. 178.
 — Mount, gold-diggings at, IV. 289, 290.
 — king of Epirus, IX. 277.
 — hieroglyphical characters of the name, XI. 390.
 — (Prof.), on the prophecies of Isaiah, XII. 625.
 Alexandra, queen of the Jews, XII. 770.
 ALEXANDRETTA, II. 469. See Scanderoon.
 ALEXANDRIA, II. 469, 224; VIII. 496—academy of, 60—the depository of the sciences, under the Ptolemies, 751—era of, VI. 670—museum, III. 789; II. 475—destruction of the temple of Serapis in, VII. 310—embellished by Ptolemy Soter, VIII. 468—library of, 475; II. 733; XIII. 381—Pharos of, 463—battle of, in 1801, V. 584; VIII. 489—siege of, by the Muslims, 475—commerce, ancient, VII. 185; XI. 460; modern, VIII. 517—Napoleon's opinion of its site, 420, *n.* 3—railway from, to Cairo, XX. 789—other ancient cities of that name, II. 473.
 — modern, II. 471.
 — a city of Virginia, II. 473; XXI. 754.
 — Russian city, II. 473.
 — in Louisiana, XIII. 699.
 ALEXANDRIAN MS., II. 474; XIII. 412.
 — SCHOOL, II. 475—anatomical, 751—surgical, XX. 811—astronomical, III. 789—mathematical, X. 500—of medicine, XIV. 452—philology advanced by, XVII. 518—Platonists of, 793—end of this school, X. 502—poetry of the, XVIII. 103.
 — or Alexandrine verse, II. 476.
 Alexandrine Library, at Rome, XIII. 412.
 ALEXICACUS, II. 476.
 ALEXIN, in Russia, II. 476.
 ALEXIS, comic poet, II. 476.
 — a Piedmontese, II. 477.
 — Czar of Russia, II. 477.

ALE—ALG

Alexis, clairvoyant impostor, XX. 438.
 ALEXIUS I., II. 477.
 — Comnenus, VII. 316, 317.
 — Strategopulus, VII. 318.
 ALEYN (Charles), II. 477.
 ALFAQUES, a Spanish seaport, II. 477.
 — Moorish clergy, so named, II. 477.
 ALFARABIUS, eastern philosopher, II. 477.
 ALFARO, a Spanish town, II. 477.
 ALFERGAN, Arabian astronomer, II. 477; III. 794.
 ALFET, II. 478.
 ALFIERI (Vittorio), II. 478—his tragedies, VIII. 147—his opinion of Washington, XXI. 765.
 Alfoeres, people of Celebes, VI. 361.
 Alfonso. See Alphonso.
 ALFORD, a town in Lincolnshire, II. 480.
 — (MICHAEL), Jesuit, II. 480.
 — battle of, V. 406.
 — on the dates of St Paul's Epistles, XVII. 350.
 Alfragan, III. 794. See Alfergan.
 ALFRED the Great, II. 480; VIII. 657—academy at Oxford founded by, II. 61—his translation of Boethius, IV. 808—his Doomsday Book, VIII. 98—Asser's life of, III. 776—his encouragement of science, XIV. 457—his navy, XVI. 89—trial by jury instituted by, XIII. 22—his ships, XX. 119—not the founder of Oxford University, XXI. 452.
 — (Prince), VIII. 662.
 ALFRETON, a town in Derbyshire, II. 481.
 Alfric, VIII. 661.
 ALGÆ, II. 481—natural order of plants, V. 217—their reproductive organs, 147—used as food, 218—their zones, 229—their classification uncertain, III. 194—distribution of, XVII. 630.
 ALGAIOLA, a Corsican seaport, II. 481.
 ALGARDI (Alessandro), II. 482; XIX. 864.
 ALGAROTH, II. 482; VI. 494.
 ALGAROTTI (Francesco, Count), II. 482.
 ALGARVE, a Portuguese province, II. 482—climate of, XVIII. 394.
 ALGAZEL, II. 482, 565; XIV. 210.
 ALGAZI, II. 482.
 ALGEBRA, II. 482—invention of, I. 556—first introduced into Europe by Leonardo of Pisa, *ib.*—first printed book on, *ib.*—Arabic notation introduced by Gerbert, *ib.*—system of Diophantus, 557—resolution of equations higher than the second degree, and extension of the rule by Cardan, *ib.*—merit of his discoveries, 558—poetical dress of his algebraic rules, *ib.*—properties of algebraic equations discovered very slowly, *ib.*—causes of this, 559—contributions to the science by Recorde, Bombelli, Vieta, Girard, Harriot, &c., 558, 559 (see these articles)—application of the algebraic analysis by Descartes to define the nature and investigate the properties of curve lines, 560—analysis of the work in which that discovery is announced, *ib.*—advantages of introducing algebra into geometry, *ib.*—the notation reduced to a system of symbolic writing, 561—the benefits of expressing quantity, and the operations on quantity, by conventional symbols, *ib.*—difference in practice between the algebraic and the geometric method of treating quantity, *ib.*—on the use of the signs *plus* and *minus*, 562, 709—algebraical signs, 709—Descartes' contributions to, 710; VI. 278—proposal of the *conchoid* by Newton, I. 711—advance made in, by the discoveries of Leibnitz, *ib.*—discoveries of De Moivre and Stirling, *ib.*—theory of quadratic factors, 712—further improvements in algebra, 712, 713—elementary works on, 713—valuable results of the introduction of, 560—applied to the calculation of annuities, III. 242; II. 536. See Equations, Negative Sign, Series, &c.
 ALGEMESI, a town of Spain, II. 564.
 ALGENIB, star, II. 564.
 ALGER, a French priest, II. 564.
 Algeria, in Africa, II. 223; X. 263—de-

ALG—ALI

clared to belong to France, 216—their conquests in, 217, 221—Duke d'Aumale, governor of, 230. See Algiers.

ALGEZIRAS, a Spanish city, II. 564; X. 620.

— or Algeciras Bay, X. 620.

ALGHALIB-BILLAH, II. 565.

ALGHAZZALI, II. 565.

ALGHERI, a city in Sardinia, II. 565.

ALGHISI (Francesco), musician, II. 565.

— (GALEAZZO), Italian architect, II. 565.

— (Tomasso), Italian surgeon, II. 565.

ALGIABARI, a Mahometan sect, II. 565.

ALGIDUS, II. 565.

ALGIERS, II. 565, 577; X. 263—Admiral Blake's negotiations with, IV. 752—Barbarossa proclaimed king of, 431—Lord Exmouth's attack on, V. 622—Bruce's residence at, 689—consul and vice-consuls at, VII. 336—taken by the French in 1830, X. 198—monarchy of, XV. 412—weights and measures of, XXI. 809—war with United States, 44.

ALGOA-BAY, II. 577; X. 711.

ALGOR, star, II. 577; IV. 84.

Algonkin, the, group of Indian tribes, IX. 347.

ALGOR, II. 577.

ALGORITHM, II. 577.

ALGUAZIL, II. 577.

Algyta, a genus of reptiles, XIX. 30.

ALHAMA, Spanish city, II. 577.

ALHAMBRA, II. 577; X. 794; III. 449.

ALHAURIN EL GRANDE, a Spanish town, II. 579.

ALHAZEN, II. 579; III. 795; X. 503—his explanation of objects appearing larger near the horizon, I. 621—his work on optics, and the value of his researches, 622, 623; XIII. 449; XVI. 523—solution of a very difficult problem by, I. 622.

ALHUCEMAS, II. 579. See Alucemas.

ALI, cousin to Mahomet, II. 579—reign of, III. 363—tomb of, at Mesjid Ali, XIV. 546.

— BEY, an eastern adventurer, II. 580; VIII. 488.

— BEY, traveller under that name, II. 580; IV. 361.

— Murad, XIII. 79.

— PACHA, II. 580—history and character of, II. 441.

— Pacha of Egypt, VIII. 490.

— a town of Sicily, II. 580.

ALIAS, in law, II. 580.

Alibaud, his attempt on the life of Louis Philippe, X. 212.

ALIBI, in law, II. 581.

ALICANTE, a city of Spain, II. 581—battle near, V. 613—insurrection at, in 1844, XX. 482.

ALICATA, a city of Sicily, II. 581; XX. 245.

ALICUDI, island, II. 581; XIII. 502.

ALIKEN, II. 581, 587—Lord Grenville's alien bill, V. 546.

— Priories, II. 582.

ALIENATION, in law, II. 582—mental, XIV. 426. See Mental Diseases.

Alima hyalina, VII. 542.

ALIMENT, in the law of Scotland, II. 582.

ALIMENTARIA LEX, II. 582.

ALIMENTARI PUERI, II. 582.

ALIMENTARY DUCT or canal, II. 582.

— function, III. 3—its organs, 69.

Alimentativeness, XVII. 562.

ALIMENTS, II. 582; XVII. 656; XIX. 610, 611—their effects on health, XIV. 440—of plants and animals, III. 178—distinguished from medicines and poisons, *ib.* See Dietetics, Food, Nutrition.

ALIMONY, II. 582.

ALIPILARIUS, II. 582.

ALIPTERIUM, II. 582.

ALIQUNT PART, II. 582.

ALIQUT PART, II. 582.

Alismaceae, nat. order of plants, V. 214.

ALISON (Rev. Archibald), II. 582; XXI. 411—his theory of beauty, IV. 540—on the pleasure arising from the study of antiquity, 545; from the contemplation

ALI—ALL

of natural scenery, *ib.*—on associations peculiar to individuals, 547—on the causes of our admiration of Greek architecture, 549.

Alison (Sir Archibald), II. 583; XXI. 413.

— (Professor), II. 583—on single vision, XIII. 462.

ALISONTIA, river, II. 583.

ALIWAL, village in N. India, II. 583—Sikhs defeated at, XI. 509.

Alizarin, VIII. 282.

ALJAMEIA, II. 583.

ALKADARI, II. 583.

ALKAHEST, II. 583.

ALKALI, II. 583; XV. 65—in soils, V. 98—metals of the alkalies, VI. 484—in the composition of the earth's crust, XVII. 619—Sir H. Davy's decomposition of, by means of galvanism, VII. 669; I. 968—alkaline poisons, XIV. 434; XVIII. 129.

ALKALIMETER, II. 583.

ALKALOID, II. 583—alkaloids as alteratives, XIX. 611.

ALKANET, plant, II. 584; V. 201; III. 122.

ALKINDI, II. 584.

ALKMAAR, II. 584. See Alcmaer.

ALKORAN, II. 584. See Alcoran.

ALLA, or Allah, II. 584.

ALLAGNA, town of Piedmont, II. 584.

ALLAHABAD, in Hindustan, II. 584; XVI. 301; XI. 479.

Allamand (M.), his criticism on Locke's argument against innate ideas, I. 107—extract of a letter from, to Gibbon, 250—Gibbon's account of, 107, *n.* 1.

ALLAN (David), II. 585.

— (Thomas), stereotyping improved by, XVIII. 550.

— (Sir WILLIAM), II. 585; XXI. 866.

— Bridge of, II. 586; XX. 704.

— river, II. 586; XX. 702.

Allanite, mineral, XV. 90.

ALLANTOIS, II. 586; XVII. 686.

ALLATIUS (Leo), II. 586.

ALLECTUS, II. 586; V. 380.

Allecula, genus of insects, IX. 132.

ALLEGANT, several counties in U.S. so named, II. 586.

— Indians, II. 680.

— mountains, II. 586; XVI. 213; XVII. 594, 394; XXI. 420, 743—their geology, II. 587, 675.

— river, II. 587; XVII. 395.

ALLEGATA, II. 587.

Allegewis, II. 683.

ALLEGIANCE, II. 587.

— oath of, II. 588.

— church, I. 537—generally due to the church in which a man has been brought up, 543.

ALLEGORY, II. 588; XIX. 132—propensity of the orientals for, XV. 759—in Spenser, XVIII. 121—French allegorical romance, 115.

ALLEGRI (Antonio), or Correggio, painter, II. 588—his style, III. 709; XVII. 72.

— (GREGORIO), II. 589.

ALLEGRO, II. 589.

ALLEN (Joseph and Richard), II. 589.

ALLELUIAH, II. 589.

ALLEMOND, French town, II. 590.

Allen, bog of, XIII. 81, 91; XXI. 286.

— (Dr JOHN), II. 590—his charge against Dr Lingard, XIII. 496.

— (Dr John), his plan for propelling vessels by ejecting water from the stern, XX. 636.

— (JOHN), archbishop, II. 590.

— (Rev. J. N.), on the climate of Dadur, VII. 616.

— Lough, XIII. 327.

— (THOMAS), II. 590.

— (WILLIAM), II. 590.

— (Captain W.), on the Dead Sea, XVII. 188.

ALLENDORF, II. 590.

ALLER, river, II. 590.

— a Saxon form of the superlative, II. 590.

ALLERION, in heraldry, II. 590.

ALLESTREE or Allestry (Richard, D.D.), II. 590.

ALL—ALM

ALLESTREE (Jacob), II. 591.

ALLEY (William), II. 591.

ALLEYN (Edward), English actor, II. 591—Dulwich College founded by, VIII. 235; XXI. 167.

ALL-HALLOW, or *All-Saints*, II. 584.

ALLIA, river, II. 592.

Alliaceous plants, XI. 741—used as food, IX. 760.

ALLIANCE, II. 592—of France and England against Russia, VIII. 40.

— Holy. See Holy Alliance.

ALLIER, in France, II. 592.

— (LOUIS), II. 592.

Allies of Rome, XIX. 307.

ALLIGATI, II. 592.

ALLIGATION, II. 592.

ALLIGATOR, II. 593; XVII. 634; XIX. 25—teeth of, XVI. 437.

— machine used in the manufacture of iron, XII. 559.

ALLIOTH, star, II. 593.

ALLITERATION, II. 593—in the Kaffir language, XIII. 226.

ALLIUM, a genus of plants, II. 594; XI. 741.

ALLIX (Pierre), II. 594.

Allman (Prof.), on the genus *Polyzoon*, XXI. 1002.

ALLOA, in Clackmannanshire, II. 594—ferry at, VI. 749—collieries at, 750—port of, 751—trade and commerce, *ib.*

ALLOCATION, II. 594.

Allochoite, mineral, XV. 85.

ALLOCUTIO, II. 594.

ALLODIUM, II. 594.

Allopathy, or Allopathy, XI. 606.

Allogonite, mineral, XV. 94.

Allomorphite, mineral, XV. 95.

Allonville, great oak of, XXI. 270.

Allophane, mineral, XV. 83.

ALLORI (Alessandro), II. 594.

— (CRISTOFANO), II. 594.

Allotropism, VI. 447.

ALLOXAN, II. 595.

ALLOY, II. 595; VI. 484.

ALL-SAINTS, island, II. 584.

ALL-SAINT'S BAY, II. 584.

ALL-SOULS, in the calendar, II. 584.

All-Souls College, Oxford, XXI. 459.

Allspice, XVII. 710.

ALLSTADT, in Saxe-Weimar, II. 595.

ALLSTON (Washington), painter, II. 595.

Alluaudite, mineral, XV. 101.

ALLUMEE, a heraldic term, II. 595.

ALLUMINOR, II. 595.

ALLUSION, II. 595.

Alluvial formation, XVII. 587.

ALLUVION, in law, II. 595.

ALLUVIUM, II. 595; VII. 722.

ALLYGHUR, II. 595—sepooy mutiny at, XVI. 309.

ALMACANTARS, II. 595. See Almucantars.

Alma, river in the Crimea—battle of the, VII. 503; XIX. 503; XXI. 375.

ALMADA, a Portuguese town, II. 595.

— beds, geological formation, XIII. 507.

ALMADEN, town in Spain, II. 595—quick-silver mines of, XV. 237; XX. 489.

ALMADIE, II. 595.

ALMAGEST, II. 595; III. 793, 794.

ALMAGRE, II. 596.

Almagrera silver mines, XV. 234.

ALMAGRO, a Spanish city, II. 596.

— (DIEGO DE), II. 596; XVII. 463.

— the younger, II. 597.

ALMAMUN, II. 597—his patronage of literature and science, 755; XIV. 456; of astronomy, III. 794; of medicine, XX. 814—his attempts to ascertain the dimensions of the earth, IX. 548; X. 468.

ALMANACK, II. 598—old almanacks, III. 581, 582—poor Richard's, X. 290.

— (NAUTICAL), II. 598; I. 834; III. 814, 815; XIV. 335, 336; XXI. 965—improved by Baily, IV. 375; and Airy, XIII. 687—its use in finding the longitude, *ib.* *et seq.*—American, III. 815.

— among antiquaries, II. 598.

Almandine, XV. 84—ruby, 87.

ALMANSA, Spanish city, II. 599.

ALM—ALP

ALMANSUR, caliph, II. 599—his patronage of astronomy, III. 794; and medicine, XIV. 456.

Almanzor, Moorish general in Spain, XX. 463.

ALMARAZ, Spanish town, II. 599.

ALMARIC, II. 599.

Almas cavern, in Transylvania, XII. 10.

ALMAZARRON, II. 599. See Mazarton.

ALMAZORA, Spanish town, II. 599.

ALME, or Alma, Egyptian dancing-girls, II. 600; VIII. 443, 448.

ALMEHRAB, II. 600.

ALMEIDA, Portuguese fortress, II. 600; V. 608.

ALMEISAR, ancient Arabian game, II. 600.

ALMELO, in the Netherlands, II. 600.

Almenar (George), physician, XIV. 457.

ALMERIA, city and province of Spain, II. 600.

ALMEYDA (Don Francisco), II. 600.

ALMIGGIM, II. 601. See Almuggim.

ALMISSA, town in Dalmatia, II. 601.

ALMOHEDES, II. 601, 602; XX. 461.

ALMOND tree, II. 601; V. 191—culture of, XI. 711—prussic acid in the kernels of the fruit, XIV. 437.

— oil, XVI. 495, 497—Indian, 496.

— furnace, II. 601.

— river in Edinburghshire, VIII. 408; XIII. 497.

— viaduct on the Edinburgh and Glasgow railway, XVIII. 763.

ALMONDBURY, township in Yorkshire, II. 601.

ALMONDS, in anatomy, II. 601.

ALMONER, II. 601.

— LORD HIGH, II. 601.

ALMORAH, II. 602.

ALMORAVIDES, II. 602, 620; XX. 461.

Almquist (J. C. L.), Swedish author, XIX. 710.

ALMS, II. 603—alms' chest, *ib.*

— houses in England, VIII. 748.

— giving, objections to, XVIII. 296.

ALMUCANTARS, in astronomy, II. 603; IV. 2; VI. 732—staff, II. 603.

ALMUCIUM, II. 603.

ALMUDE, Portuguese liquid measure, II. 603.

ALMUGGIM tree, II. 603.

ALMUNECAR, Spanish city, II. 603.

ALNAGE, II. 603.

ALNAGER, II. 603.

ALNUS, genus of plants, II. 603; V. 208.

ALNWICK, II. 603—castle, XVI. 300—diminished mortality in, owing to sanitary measures, XIX. 604.

ALOA, II. 604.

ALOE or Aloes, genus of plants, II. 604; V. 212—American aloe, *ib.*—poisonous to some animals, III. 179—aloe fibre, XXI. 783.

ALOGI, ancient heretics, II. 604.

ALOGOTROPHIA, II. 604.

Alompra, V. 782.

Alomya, genus of insects, IX. 189.

Alontium or Aluntium, II. 641.

Alonzo. See Alphonso.

ALOPECIA, II. 604.

Alopecias, genus of fishes, XII. 324, 322.

Alopeciidae, family of fishes, XII. 324.

ALOPECURUS, a genus of grasses, II. 604.

ALORA, Spanish town, II. 604.

ALOSA, genus of fossil fishes, II. 604; XII. 347.

ALOST, a Belgian town, II. 604.

Alouattes, or howling monkeys, XIV. 142.

ALPACA, a species of llama, II. 605; XIV. 205—in Bolivia, IV. 821, 823—in Ecuador, VIII. 387—Peru, XVII. 473—wool of, XXI. 906.

ALFARGATES, II. 605.

ALP ARSLAN, Sultan, II. 604; XVII. 437—his war with Romanus IV., XIX. 355.

ALPHA, II. 605.

ALPHABET, II. 605—Coptic, XI. 412—Egyptian, 417—stenographic alphabets, XX. 675—alphabet of nature, 676—for the blind, IV. 776—finger, 778—in electric telegraphs, XXI. 102, 115 *et seq.*

ALP—ALT

ALPHEUS, father of James the Less, II. 617.
 ALPHERY (Mikhipher), II. 617.
 ALPHEUS, II. 617; XI. 11.
 ALPHONSE, islands, II. 617.
 ALPHONSIN, in surgery, II. 617.
 Alphonsine Tables, II. 620.
 ALPHONSO, the name of 22 Spanish and Portuguese sovereigns, II. 618.
 — I. king of Aragon, XX. 463.
 — X. king of Castile, II. 619—astronomy cultivated by, III. 796.
 ALPHONSUS, Spanish historian, II. 622.
 Alpi Apuane, in Tuscany, XXI. 392.
 Alpine plants in Scotland, XIX. 796.
 ALPINI (Prospero), II. 622—on the balsam of Mecca, IV. 401, 402—on the plague, XVII. 749.
 ALPISTE, or Alpia, II. 623.
 ALPS, II. 623; IX. 381; XVII. 596; XX. 887; XXI. 495—botany of the, V. 226—glaciers of, X. 634 *et seq.*—eocene rocks of, XV. 214—Hannibal's passage of, II. 623; VI. 293; XI. 209—Buonaparte's passages, X. 105, 118—geology of, 583; XVII. 596—scenery of, compared with that of the Himalayas, XI. 438—snow-level, XVII. 602—chamois and ibex, peculiar to, 630, 632—heights of the principal peaks, 642—rivers proceeding from, XIX. 181—Simplon pass and road, XX. 298—of the Valais, XXI. 504.
 — (HIGHER and LOWER) departments of France, II. 628.
 ALPTEGHIN, II. 628.
 ALPUJARRAS, in Spain, II. 628.
 ALQUIERE, Portuguese measure, II. 628.
 ALREDUS, English historian, II. 628.
 ALRESFORD, town in Hants, II. 628.
 ALSACE, in France, II. 628; X. 277—Charles X.'s journey to, 195—wines of, XXI. 883.
 ALSEN, Danish island, II. 629.
 ALSFELD, in Hesse Darmstadt, II. 629.
 Alsh (Loch), XIX. 795.
 ALSHASH, city and province in Bokhara, II. 629.
 ALSHEDA, in Sweden, II. 629.
 ALSIRAT, II. 629.
 ALSIUM, an ancient city of Etruria, II. 629.
 ALSOP (Anthony), II. 629.
 — (VINCENT), II. 629.
 ALSTAHUUG, II. 629.
 ALSTED (J. Heinrich), II. 629.
 Alster, river, XII. 198.
 ALSTON (Charles), II. 629.
 Alston's alphabetical system for the blind, IV. 781; XVIII. 554.
 Alstonite, mineral, XV. 95.
 ALSTON-MOOR, II. 630. See Aldston-moor.
 ALT, in music, II. 630.
 — or Alut, branch of the Danube, II. 630; XII. 10.
 ALTAI mountains, II. 630; III. 734; XVII. 599; XIX. 548.
 Altaic race of man, II. 775. See Mongolian.
 Altaite, mineral, XV. 118.
 ALTAMURA, a Neapolitan city, II. 630.
 ALTAR, II. 630; III. 433—use of, in Christian churches, derived from Judaism and Paganism, I. 510.
 ALTAR-THANE, II. 632.
 Alt-azimuth mounting of telescopes, XXI. 143.
 ALTDAMM, city in Pomerania, II. 632.
 ALTDORF, town in Bavaria, II. 632—in Baden, *ib.*—in Switzerland, *ib.*; XX. 882.
 ALTDORFER (Albert), II. 632.
 ALTEA, town in Spain, II. 632.
 ALTELAND, in Hanover, II. 632.
 ALTENA, II. 632. See Altona.
 — a circle and town in Westphalia, II. 632.
 — river in Finmark, XIII. 234.
 ALTENBERG, II. 632—tin mine of, XV. 240.
 ALTENBRUCH, II. 632.
 ALTENBURG, II. 632; XIX. 680.
 ALTENKIRCHEN, II. 632.
 ALTERANTS, in medicine, II. 633—in dyeing, VIII. 278.

ALT—AMA

ALTERN-BASE, II. 633.
 ALTERNATE, in heraldry, II. 633.
 — husbandry, II. 263.
 ALTERNATION, II. 633—of beds, in geology, XV. 161.
 ALTERNATIVE, II. 633.
 ALTHEA, a genus of plants, II. 633; V. 184.
 Althorp, (Lord). See Spencer, Earl.
 Altica, genus of insects, IX. 150.
 ALTIN, II. 633—lake in Siberia, *ib.*
 ALTING (Heinrich), II. 633.
 — (JACOB), II. 633.
 — (MENSO), II. 634.
 Altingiaceæ, nat. order of plants, V. 207.
 ALTINUM, II. 634.
 ALTITUDE, II. 634—instrument, *ib.*—of geometrical figures, X. 520.
 ALTKIRCH, in France, II. 634.
 Altmann (L.), his works on insects, IX. 21.
 ALTMUHL, river, II. 634.
 ALTO-BASSO, II. 634—fagotto, *ib.*—*ri-pieno*, *ib.* See Music.
 — Douro, wines of, XXI. 884.
 Alto-Relievo, II. 634; IV. 492; XIX. 5.
 ALTOMONTE, Italian town, II. 634.
 ALTON, town in Hants, II. 634—village in Staffordshire, *ib.*
 ALTONA, II. 634—climate of, VII. 746.
 ALTORF, II. 634. See Altdorf.
 ALTRANSTADT, town in Saxony, II. 634.
 ALTRINGHAM, in Chester, II. 635—carrot, XI. 740.
 ALTSOL, II. 635.
 ALTSTRELITZ, German town, II. 635.
 ALUCEMAS, island, II. 635.
 Alucita, genus of insects, IX. 218.
 ALUDELS, II. 635.
 ALUM, II. 635; XV. 97—sometimes used by bakers, IV. 381—prevents dry rot VIII. 212—in dyeing, 273, 277, 279, 293—used in adulterating bread, IX. 770—specific gravity of, XII. 88—optical properties of, XVI. 690.
 — slate, II. 638.
 — stone, II. 637; XV. 96.
 Alum Bay, eocene beds of, XV. 212—excellence of its sand for window-glass, X. 662.
 Alumina, VI. 488; XV. 65—in rocks and soils, II. 389 *et seq.*—a mordant in dyeing, VIII. 279, 315—sulphate of, II. 638.
 Aluminite, II. 639; XV. 96.
 Aluminum, VI. 487.
 Alum-root, plant, V. 194.
 Alunite, mineral, XV. 96.
 ALUNNO (Nicolo) II. 641.
 Alunogene, mineral, XV. 97.
 ALUNTUM, or Alontium, II. 641.
 Alurnus, genus of insects, IX. 148.
 Aluterius, genus of fishes, XII. 313.
 ALVA DE TORMES, II. 641, 440.
 ALVA or ALBA (F. A. de Toledo, Duke of), II. 641—his proceedings in the Netherlands, XI. 513 *et seq.*—his cruelties in Brussels, V. 699.
 ALVARADO (Pedro de), II. 643; XI. 77.
 — Mexican town, XIV. 725.
 ALVARES DE LUNA, II. 643.
 ALVAREZ (Francisco), II. 643.
 — (DON JOSE and MANUEL), II. 643.
 — (Juan), president of the Mexican republic, XIV. 714.
 ALVEOLUS, II. 643.
 ALVERCA, town in Portugal, II. 643.
 ALVINZ, in Transylvania, II. 643.
 Alvinzi (General), XV. 788 *et seq.*
 ALWAIDII, a Mahometan sect, II. 644.
 ALWUR, in Central India, II. 644.
 ALYATTES, king of Lydia, II. 644; XIII. 747—barrow of, IV. 473.
 ALYPIUS, II. 644; XII. 776.
 Alyson, genus of insects, IX. 196.
 ALYTARCHA, II. 644.
 ALYTH, a burgh in Perthshire, II. 644.
 ALYZIA, an ancient city of Acarnania, II. 644.
 ALZIRA, II. 644. See Alcira.
 AMA, II. 644.
 AMABYR, II. 644.
 AMAC, Persian poet, II. 644.

AMA—AMB

Amada, temple of, III. 434, 436, 441.
 Amadan. See Hamadan.
 AMADEUS, V., VIII., and IX., counts of Savoy, II. 644, 645; XXI. 509.
 — II., king of Sicily, XIX. 641.
 AMADIA, town in Kurdistan, II. 645.
 AMADIS DE GAULA, II. 645.
 AMADOU, II. 645.
 Amænophthes, Egyptian king, XI. 389.
 AMAIN, a sea-term, II. 645.
 AMAK, island, II. 645.
 AMAL, Swedish town, II. 645.
 AMALAGAN, II. 646.
 AMALARIC, II. 646.
 AMALASONTHA, II. 646.
 Amalden, quicksilver mines at, XV. 237.
 AMALEKITES, II. 646.
 AMALFI, Italian city, II. 647; XX. 240—alleged discovery of the Pandects at, VI. 747—royal palace of, XV. 782.
 AMALGAM, II. 647; VI. 498—for electrical machines, VIII. 536.
 — mineral, XV. 114.
 AMALGAMATION, II. 647—extraction of silver by, V. 46.
 AMALIA, II. 648.
 AMALTEO, name of three Italian poets, II. 648.
 — (POMPONIO), painter, II. 648.
 AMALTHÆA, II. 648.
 Amalthei, ammonites, XVII. 113.
 AMAMA (Sixtinus), II. 648.
 AMAND (M. A. G. Sieur de St), II. 648.
 — (SAINT), towns in France, II. 648.
 AMANTEA, Neapolitan seaport, II. 648.
 AMANUS, mountain of Syria, II. 648.
 Amaponda, Kafirarian tribe, XIII. 32, 37.
 AMARANTACEÆ, or Amarantaceæ, an order of plants, II. 649; V. 203.
 AMARANTE, a Swedish order of knighthood, II. 648.
 AMARAPURA, II. 649. See Ummerapoora.
 AMARA SINHA, II. 648.
 Amarygmus, genus of insects, IX. 132.
 AMARYLLIDÆÆ, or Amaryllidaceæ, an order of plants, II. 649; V. 212.
 AMARYNTHIA, festival, II. 649.
 Amarynthos, amphictyony of, II. 729.
 AMASA, II. 649.
 AMASIA, II. 649.
 AMASIS, king of Egypt, II. 649; VIII. 465; XI. 389.
 Amatembu, Kafirarian tribe, XIII. 32, 37.
 Amathusia, genus of insects, IX. 208.
 AMATI (Pasquale), II. 649.
 Amativeness, faculty of, XVII. 562, 673.
 AMATUS LUSITANUS, II. 649.
 AMAUROSIS, II. 649—in the domestic animals, XXI. 578.
 Amaury, his invasion of Egypt, VIII. 480.
 AMAXICHI, II. 649; XII. 452; XIII. 348.
 Amaxosa, Kafirarian tribe, XIII. 32, 37.
 AMAZIAH, king of Judah, II. 649.
 Amazighis, African race, XV. 594, 595.
 AMAZON, river, II. 650, 675; V. 292; III. 675; XVII. 603, 646; XIX. 182—basin of the, II. 668; its flora, V. 293; XVII. 629—physical characters of, XVI. 87—Acuna's exploratory voyage on the, II. 120—navigation of the, 675—sea freshened by the water of, XVII. 573—its connection with the Orinoco, XVI. 716—bores in, XVII. 581—country inundated by, 601—silvas of, 604, 609.
 — stone, mineral, XV. 70.
 Amazonas, in Peru, XVII. 474.
 AMAZONS, female warriors, II. 650.
 AMBACHT, II. 652.
 AMBARVALIA, II. 652.
 AMBASSADOR, II. 652.
 Ambassis, genus of fishes, XII. 275.
 Ambato, town in Ecuador, XI. 197.
 AMBE, in surgery, II. 655.
 AMBER, II. 655; XV. 124—electricity of, VIII. 523—mines of, in Burmah, V. 779—of the Æstir, X. 572—specific gravity of, XII. 88—fossil insects in, XVII. 103—in Prussia, XVIII. 669, 712—statue of, XIX. 844—in Yunnan, XXI. 960—its use in making varnish, 526.
 — TREE, II. 656.

AMB—AME

AMBERG, II. 656.
 AMBERGER (Christopher), painter, II. 656.
 AMBERGRIS, II. 656; XIV. 233.
 AMBERT, a French town, II. 658.
 AMBIANT, now Amiens, II. 658.
 AMBIDEXTER, II. 658.
 AMBIENT, II. 658.
 AMBIGENÆ OVES, II. 658.
 AMBIGENAL HYPERBOLA, II. 658.
 Ambiguity, fallacies of, IX. 478.
 AMBIGUOUS, II. 658.
 Ambiotoca, genus of fishes, XII. 268.
 Ambiotocidæ, family of fishes, XII. 268.
 AMBIT, II. 658.
 AMBITION, II. 658.
 AMBITUS, II. 658.
 Amble, pace of a horse, XI. 656.
 AMBLESIDE, in Westmoreland, II. 658.
 AMBLETEUSE, in France, II. 658.
 Amblogaster, genus of fishes, XII. 237.
 AMBLYGON, in geometry, II. 659.
 AMBLYGONITE, mineral, II. 659; XV. 74.
 Amblyopsis, genus of fishes, XII. 236.
 Amblyopus, genus of fishes, XII. 306.
 AMBLYOPY, II. 659.
 Amblypterus, genus of fossil fishes, XII. 334; XVII. 125.
 Amblyrhynchus, teeth of, XVI. 434.
 Amblysemsius, genus of fossil fishes, XII. 336.
 Amblyterus, genus of insects, IX. 123.
 Amblyurus, genus of fossil fishes, XII. 334.
 AMBO, or Ambon, II. 659.
 AMBOISE, French town, II. 659.
 — (FRANÇOIS and GEORGE D'), II. 659.
 Ambonocychia, fossil mollusks, XVII. 106.
 AMBOYNA, island, II. 659; XV. 404—lizard, XIX. 32—serpents of, 54.
 AMBRACIA, in Epirus, II. 661.
 AMBRESBURY, II. 662. See Amesbury.
 AMBROGI (Domenico), painter, II. 662.
 AMBRONES, II. 662.
 AMBROSE, of Alexandria, II. 662.
 — (St), bishop of Milan, II. 662; VII. 311—said to have introduced antiphonal singing, III. 277.
 — (ISAAC), II. 664.
 — (Saint), island, II. 664.
 AMBROSIA, II. 664.
 AMBROSIAN OFFICE, or rite, II. 664; XIII. 516.
 — library, at Milan, XIII. 413.
 — liturgy, XIII. 516.
 AMBROSIN, coin, II. 664.
 AMBROSIUS Aurelianus, II. 664—Stonehenge said to have been erected by, XX. 709.
 AMBRY, II. 665.
 AMBUBALÆ, II. 665.
 AMBULANCE, II. 665.
 AMBULANT, II. 665.
 AMBULATORY, II. 665.
 AMBURIUM, II. 665.
 Ambustus (Q. Fabius), XIX. 303.
 AMEDABAD, city of Hindustan, II. 665.
 AMEDIANS, an order of monks, II. 665.
 AMEDNUGGUR, in Hindustan, II. 665; VII. 690.
 Ameilhon, on the classification of books, IV. 715, 716.
 Ameivas, reptiles, XIX. 28.
 AMELAND, island, II. 665.
 AMELIA, II. 666.
 — ISLE, II. 666.
 AMELOT de la Houssaye (A. Nicolas), II. 666.
 AMELOTTE (Denis), II. 666.
 — (F.), his French New Testament, IV. 701.
 AMEN, II. 66.
 — Egyptian deity, VIII. 436.
 AMEND, or Amende, II. 666—amende honorable, *ib.*
 AMENDMENT, II. 666. See Parliament.
 Amenemha I. II. III. IV., Egyptian kings, VIII. 455, 456.
 Amen-numt, Egyptian queen, VIII. 460.
 Amenoph I. II. III., Egyptian kings, VIII. 460.
 Amenophis, his encouragement of the mili-

AME—AME

tary spirit among the Egyptians, III. 621.
 Amenophium, temple of, in Egypt, VIII. 510.
 Amenses, XI. 388.
 Amentia, XIV. 426.
 Amentiferous trees or shrubs, V. 115, 207, 208.
 AMENTUM, or Ament, II. 666; V. 115.
 AMERCEMENT, in law, II. 666.
 Amerhinus, genus of insects, IX. 140.
 AMERIA, II. 666.
 AMERICA, II. 667—physical astronomy in, I. 827—armies of, III. 661—Cabot's discoveries in, VI. 47—botany, V. 225, 227, 228; XVII. 627, 628, 629—discovery of, by Columbus, VII. 115, 188; X. 471, and *n.*—effects on commerce of the influx of gold and silver from, VII. 189—corn trade of, 404—cotton-wool, 447—trade with England, VIII. 741, 733—emigration to, 650, 651—insects of, IX. 69—ethnology, 347—fairs in, 469—glass-making, X. 660—antiquities of Central, XI. 77—rifle of, 101—first to establish commerce with Japan, XII. 698—variation of the needle in, XIV. 51, 53—languages of, XIII. 199, 203; XVII. 536—religious missions to foreign countries, XV. 270; sum of money expended on, 272—education in, 820—newspaper press, XVI. 192, 193, 194, 195—coinage, 390—tertiary strata, XVII. 588—mean elevation of the surface, 590—mountains of, 592; height of, 644, 645—mammals of, 631, 632—birds, 633, 634; XVI. 732—serpents, 634—distinction between fossil fauna of, and that of the old world, 638—clocks, VII. 18—Academy of Sciences, II. 66—Oriental Society of, III. 759—Bible Society, IV. 704—supply of the precious metals from, XVIII. 460—produce of the American mines, 460, 461, 462—reptiles of, XIX. 25, 28 *et seq.*, 54.—(North), aurora borealis in, IV. 244—Humboldt's vertical section of, 469—war between the British and French in, V. 463—remarkable wooden bridge in, VI. 384—temperature, 770, 773—its colonization by the British, VII. 136—British colonies in, 147—exports from Britain to, 190—fur trade, X. 345, 347—glaciers, 635—languages, XIII. 219—hospitals for the insane, XIV. 528—mines of, XV. 232, 234—metallic produce, 248—lower Silurian rocks, 197—upper Silurian, 199—Devonian, 200—carboniferous, 204—eocene, 214—miocene, *ib.*—extent of its coast-line, XVII. 585—mountains, 593, 594; height of, 645—rivers, 604—earthquakes in the south-east districts, 616—iron ores of, XII. 541—discoveries in the Arctic regions of, XVIII. 170—post-office, 406, 408—presbyterianism in, 491—Associate Synod of, 492—Quakers in, 720; schisms among, 721—prison discipline in, 571—as a receptacle for British convicts, 576—Russian possessions in, XIX. 552—course of the rivers of, 181—surgery in, XX. 819—timber of, XXI. 276—Tocqueville on, XXI. 299—slavery in, XXI. 321—sulcide, 799—states of, 419—debt of the different states of, 428—cultivation of the vine, and winemaking in, 888—volcanoes of, 603—emigration to, 677—map of, II. PL. XXII. See United States, New York, and the other North American States, Canada, &c.; Washington, Jefferson, &c.
 —(South), French scientific expedition to, V. 243; IX. 549—recognition by Britain of the independence of the republics of, V. 639—trade with England, VIII. 733—ethnology, IX. 348, 349—languages, XIII. 223—mines, XV. 235—metallic produce, 248, 249—birds, XVI. 732—pearl fisheries, XVII. 357—extent of its coast-line, 585—tendency to elevation in the whole continent, 590—volcanoes of, 590, 593; XXI. 603, 605—height of mountains, XVII. 645

AME—AMM

—rivers of, 603—Humboldt's travels in, I. 992; his view of the distribution of plants in tropical America, XVII. PL. IV.—slavery in, XX. 321—wines of, XXI. 882—map of, II. PL. XXIII. See the different countries of; Andes, Amazon, &c.
 AMERICA, UNITED STATES OF, II. 714. See United States.
 American Indians, II. 676, 680; VI. 146; IX. 347, 348, 349—traditions of the Deluge among, VII. 719. See Cherokees, Esquimaux, &c.
 American war, V. 469, 477, 480 *et seq.*—Burke's opposition to, 776—compensation to the royalists, 527. See United States, Washington.
 AMERIGO VESPUCCI, II. 714. See Vespucci.
 AMERSFOORT, a Dutch town, II. 714.
 AMERSHAM, in Bucks, II. 714.
 AMES (Fisher), II. 715; XXI. 424—celebrated speech of, XXI. 758.
 —(JOSEPH), II. 715—his typographical antiquities, IV. 707.
 —(WILLIAM), D.D., II. 715.
 AMESBURY, in Wilts, II. 715.
 AMETHYST, II. 715; XV. 69—structure of, XVI. 541—in heraldry, II. 715—circular polarization in, XVI. 676, 677—dichroism, 666.
 AMETHYSTINE, II. 715.
 AMHARA, II. 715, 56.
 Amharic or Abyssinian alphabet, II. 615—language, II. 57; XIII. 225.
 AMHERST (Jeffrey), Lord, II. 715.
 —(General), V. 463.
 —in India, II. 715.
 —in Hants, Massachusetts, U.S., II. 716.
 AMHERSTBURG, II. 716.
 AMHURST (Nicholas) II. 716.
 Amia, genus of fishes, XII. 316, 317.
 AMIANTHUS or Asbestos, II. 716; XV. 81.
 Amlata, mountain, XXI. 392, 393.
 AMICABLE BENCHES, II. 716.
 —numbers, II. 716.
 Amici (Prof.), his micrometer, XIV. 749—on compound object-glasses, 777, 778, 782—his microscopes, 780, 783, 785.
 —(Vicenzo), on the microscope, XIV. 785.
 AMICTUS, II. 716.
 AMICUS CURLE, II. 716.
 AMIDA, Japanese god, II. 716.
 Amide, VI. 466.
 AMIENS, II. 716; XX. 412—population, X. 277—peace of, V. 585, 587; X. 121, 126; XV. 794—manufacture of cotton and cotton-velvet at, X. 252.
 Amiidæ, family of fishes, XII. 317.
 AMILCAR, II. 717. See Hamilcar.
 AMILICTI, II. 717.
 Amin (Muhammad), XVII. 20.
 AMINTA, II. 717.
 AMIOT (Père), Jesuit, II. 717—on the Chinese, VI. 567—on ancient Chinese characters, 572, 577.
 AMISUS, in Pontus, II. 717.
 AMITERNUM, II. 717.
 AMITTERE LEGEM TERRÆ, II. 717.
 AMLWCH, seaport in Anglesey, II. 717.
 AMMA, II. 717.
 AMMAN (J. Conrad), II. 717.
 —(PAUL), II. 717.
 —or Ammant, II. 718.
 AMMANATI (Bartolomeo), II. 718.
 AMMIANUS MARCELLINUS, II. 718.
 AMMIRATO (Scipio), II. 718.
 Ammobates, genus of insects, IX. 200.
 Ammocetes, genus of fishes, XII. 228.
 Ammocetidae, family of fishes, XII. 225.
 AMMODYTES, genus of fishes, II. 718.
 AMMON, or Ammonium, II. 718; XVI. 397.
 —the Egyptian Jupiter, II. 719, 724; XI. 382.
 —(ANDREAS), Latin poet, II. 719.
 —(Dr), on the Pentateuch, XVII. 402—on theology, XXI. 194 *et seq.*
 AMMONIA, II. 719; VI. 507; XV. 65—its composition, II. 720; VI. 465—salts of, 500—a constituent of the atmosphere, II. 376; VI. 463, 465—specific gravity

AMM—AMP

of, XII. 89—absorbed by the roots of plants, II. 379; V. 95—poisonous properties of, XIV. 434, 435—decomposition of, II. 384—Davy's experiments on, VII. 670—from peat, XVII. 359.
 Ammonia, sulphate and muriate of, II. 412.
 —a name of Juno, II. 719.
 Ammonia-alum, XV. 97.
 AMMONIAC, II. 719—sal-ammoniac, *ib.*; X. 433—origin of the name, II. 718—gum-ammoniac, V. 195.
 Ammoniacal liquor, as manure, II. 413—*from gas-works*, X. 433.
 AMMONITES, fossil shells, II. 723; VII. 406; XV. 397; XVII. 111, 113.
 —people of Palestine, II. 723.
 Ammonitidae, fossil mollusks, XVII. 112.
 AMMONITIS, a country of Arabia Petraea, II. 723.
 Ammonium, VI. 465; II. 720.
 AMMONIUS SACCAS, of Alexandria, II. 723.
 —ancient lithotomist, XX. 811.
 Ammophilus, genus of insects, IX. 195.
 Ammothea, genus of Arachnides, III. 387.
 AMMUNITION, II. 724.
 AMNESTY, II. 724.
 AMNIOS, II. 724; XVII. 686; III. 72.
 Amceba, genus of zoophytes, XXI. 1007.
 AMOEBAEUM, a kind of poem, II. 724.
 Amolbite, mineral, XV. 116.
 Amok, "running amok," XIV. 105.
 AMOL, a city of Persia, II. 724.
 AMOMUM, genus of plants, II. 724; VI. 232; V. 211.
 AMON, an Egyptian god, II. 724.
 —a king of Judah, II. 724.
 AMONEBURG, in Hesse-Cassel, II. 724.
 Amontillado sherry, XXI. 884, 890.
 AMONTONS (Guillaume), II. 724—his barometer, IV. 455, 457—his pneumatic experiments, XVIII. 53.
 Amoo, river. See Oxus.
 Amoor, river, XIX. 548—Russian possessions on the banks of, *ib. n.*
 AMORBACH, city in Bavaria, II. 725.
 Amoreux (N.), his work on the venomous insects of France, IX. 8.
 AMORGO, island, II. 725.
 AMORITES, II. 725.
 Amoros (Col.), on gymnastics, XI. 169.
 AMORPHOUS, II. 725.
 Amorphozoa, XVII. 92; XXI. 1008.
 AMORTIZATION, in law, II. 725.
 AMOS, the prophet, II. 725.
 Amosis, Egyptian king, VIII. 460.
 AMOUR (Guillaume de St), II. 725.
 —river, II. 725. See Amur.
 AMOY, II. 726—opened to British commerce in 1842, VI. 597—exports and imports, 591.
 Ampelidae, nat. order of plants, V. 187.
 Ampelis, genus of birds, XVI. 750.
 AMPERE (Andre Marie), II. 726; I. 974—his experiment of projecting water through a vertical slit, I. 727—his electro-dynamic theory, 974; consideration of that theory, 975—his great merit, *ib.*—Sir Humphry Davy's conduct towards, VII. 671—his discoveries in electro-magnetism, VIII. 532—on optics, XVI. 546—his suggestion for an electric telegraph, XXI. 94—on electro-magnetism, 638—his rotatory magnet, *ib.*, 639—his electro-dynamic cylinders, *ib.*—his revolving battery, 640—his electripeter, 643.
 Amphacanthus, genus of fishes, XII. 304.
 AMPHIARAUS, prophet of Argos, II. 726—oracle of, XVI. 698—temple of, IV. 192.
 AMPHIBIA, II. 726; XIV. 171; XIX. 14—fossil, XVII. 132—their blood-globules, II. 779—teeth, III. 105.
 AMPHIBOLE, mineral, II. 727.
 Amphibolite, II. 727; XV. 135.
 AMPHIBIOLOGY, II. 727.
 AMPHIBRACHYS, II. 727; IX. 770.
 Amphibrya, class of plants, V. 179.
 Amphicoma, genus of insects, IX. 126.
 Amphicoela, fossil reptiles, XVII. 152.
 AMPHICOME, II. 727.
 AMPHICTYONX, II. 727; IX. 497.
 Amphicyon, genus of fossil mammals, XVII. 165—dentition of, XVI. 464.

AMP—AMU

Amphidesma, genus of mollusks, XV. 342.
 Amphidotus, fossil echinoidea, XVII. 100.
 AMPHIDRYON, II. 729.
 AMPHILA, II. 729.
 Amphilestes, genus of fossil mammals, XVII. 157.
 AMPHILOCHIA, II. 729.
 AMPHILOCHIUS, bishop, II. 729.
 AMPHILOCHUS, diviner, II. 729.
 AMPHIMACER, II. 729; IX. 770.
 Amphinesians, in ethnology, IX. 347.
 Amphinome, genus of annelides, XI. 297.
 AMPHION, in mythology, II. 729.
 AMPHIORCIA, II. 729.
 Amphioxidae, family of fishes, XII. 227.
 Amphioxus, genus of fishes, XII. 227.
 Amphipoda, family of Crustacea, VII. 542.
 AMPHIPOLIS, II. 729; XIII. 763; XXI. 240.
 Amphipnous, genus of fishes, XII. 231.
 Amphiprion, genus of fishes, XII. 265.
 AMPHIPROSTYLE, II. 729; III. 507.
 Amphiroa, genus of zoophytes, XXI. 1006.
 Amphisbæna, reptiles, XIX. 40—teeth of, XVI. 428.
 Amphisbænidae, family of reptiles, XIX. 40.
 AMPHISCETI, II. 729; X. 485.
 Amphisile, genus of fishes, XII. 305—of fossil fishes, XII. 344.
 AMPHISSA, II. 729—sacred war against, *ib.*
 Amphistium, genus of fossil fishes, XII. 345.
 Amphistoma, genus of zoophytes, XXI. 979.
 AMPHITHEATRE, II. 729; III. 469—Roman, at Nîmes, XVI. 279.
 Amphitherium, XVII. 157—jaw and teeth of, XVI. 448.
 AMPHITRITE, II. 731—genus of annelides, XI. 295.
 AMPHITRYON, II. 731.
 AMPHIUMA, genus of reptiles, II. 732; XIX. 84.
 Amphodelite, mineral, XV. 71.
 AMPHORA, II. 732; XVIII. 713.
 AMPHORARIUM VINUM, II. 732.
 AMPHOTIDES, II. 732.
 Amphrodeiridae, family of fishes, XII. 236.
 Amphroderus, genus of fishes, XII. 236.
 Amplexus, fossil corals, XVII. 97.
 AMPLIATION, II. 732.
 AMPLITUDE, in astronomy, II. 732; IV. 1—magnetical, II. 732.
 AMPSANCTI VALLIS, II. 732.
 AMPTHILL, II. 732—park, IV. 569.
 Ampulex, genus of insects, IX. 195.
 AMPULLA, II. 732—knights of St. *ib.*; XIII. 120.
 AMPULLARIA, a genus of shells, II. 732; XV. 365, 366.
 AMPURIAS, in Catalonia, II. 732.
 Amputation, XX. 825—now less frequently resorted to than formerly, 823.
 AMPYX, II. 732.
 AMRAPHEL, king of Shinar, II. 732.
 AMRIAL-CAIS, Arabian poet, II. 732.
 AMRITSIR, in Northern India, II. 732; XVIII. 691.
 AMRU-EBN-AL-AS, a Saracen leader, II. 733, 470—burning of the Alexandrian library attributed to, II. 471; XIII. 381—Egypt subjugated by, VIII. 474; XVI. 512.
 AMRUM, island, II. 733.
 Amsanctus, pools of, XII. 637.
 AMSDORFIANS, a Protestant sect, II. 733.
 AMSTERDAM, II. 733—corn trade of, VII. 402—3—diamond cutting at, VIII. 4—athenæum at, XI. 590—bank of, XV. 488—population of, 644; XI. 582—early newspaper of, XVI. 202—canal of, 55—weights and measures of, XXI. 804, 806.
 —town in New York, U. S., II. 735.
 —island in South Sea, II. 735; IV. 268; XVIII. 276.
 —New, town of British Guiana, II. 735.
 Amu, river in Bukhara, V. 758.
 AMULET, II. 735.
 Amur, river, II. 725; XVII. 607, 646.

AMU—ANA

AMURATH, or Amourad I., sultan, II. 735; VII. 320; XXI. 368, 376.
 — II., emperor of the Turks, II. 735; VII. 320; XXI. 368, 376.
 — III., emperor, II. 736; XXI. 369, 376.
 — IV., emperor, III. 736; XXI. 369, 376.
 Amusement, natural desire of, VIII. 169.
 AMUSETTE, small cannon, II. 736.
 AMWELL, II. 736.
 Amwoth, vitrified fort at, IX. 792.
 AMYCLÆ, a city of Laconia, II. 736; XIII. 148—a Grecian colony, II. 736.
 AMYGDALEÆ, an order of plants, II. 736; V. 191.
 Amygdaline, VI. 514, 518.
 AMYGDALOID, II. 736—in Iceland, XII. 202.
 Amygdalus, V. 191. See Almond tree.
 Amylaceous constituents of plants, II. 379.
 Amyridaceæ, nat. order of plants, V. 190.
 AMYLINE, II. 736. See Chemistry.
 AMYNTAS, II. 736; XIII. 761, 762.
 — a Greek writer, II. 736.
 AMYNTIANUS, a Greek historian, II. 736.
 AMYOT (Jacques), bishop of Auxerre, II. 736.
 AMYRALDUS or Amyrant (Moise), II. 736.
 Amyridaceæ, nat. order of plants, V. 190—region of, 228.
 Amyrtaeus, Egyptian king, VIII. 466.
 ANA, II. 736.
 ANABAPTISTS, II. 741; XIV. 501—persecution of, in the reign of Queen Elizabeth, VIII. 712—tumults by, in 1524, XIII. 731.
 ANABAS, genus of fishes, II. 743; XII. 289, 290.
 ANABASIS, II. 743; XXI. 950.
 Anabates, genus of birds, XVI. 768.
 ANABATHRA, II. 743.
 ANABLEPS, genus of fishes, II. 743; XII. 219, 252, 253—eyes of, III. 95.
 ANABOLÆUM, II. 743.
 ANACALYPTERIA, II. 743.
 ANACAMPTIC, II. 743.
 Anacanthini, or Anacanthi, order of fishes, XII. 268—fossil, XVII. 128.
 Anacanthus, genus of fishes, XII. 327.
 ANACARDIACEÆ, nat. order of plants, II. 743; V. 189.
 Anacardium, genus of plants, V. 190. See Cashew-nut.
 Anaceum, in ancient Athens, IV. 163.
 Anacharis alsinastrium, American river-weed, XVII. 624.
 ANACHARSIS, the Scythian, II. 743.
 — travels of, II. 743. See Barthelemy.
 ANACHORET, II. 743.
 ANACHRONISM, II. 743.
 ANACLASTIC GLASSES, II. 743.
 ANACLASTICS, II. 743.
 ANACLETERIA, ancient festival, II. 743.
 ANACLETICUM, II. 743.
 ANACLETUS, or Cletus, Bishop of Rome, II. 743.
 — anti-pope, II. 743.
 ANACLINTERIA, II. 743.
 ANACŒNOSIS, II. 743.
 ANACOLUTHON, II. 743.
 ANACONDA, a large snake, II. 744.
 ANACREON, II. 744; XVIII. 102—his address to the Cicada, IX. 168—Moore's translation of, XV. 530.
 ANACREONTIC VERSE, II. 744.
 ANACRISIS, II. 744.
 ANACRUSIS, II. 744.
 ANADEMA, II. 744.
 ANADIPLOSIS, II. 744.
 ANADYOMENE APHRODITE, II. 744.
 ANADYR, river, II. 744.
 ANÆSTHESIA, II. 744—anaesthetic agents, VI. 629; history of, 631, 632—induced by mesmerism, XX. 433, 436—in surgical operations, 820. See Chloroform.
 ANAFESTO PAOLLUCIO, first doge of Venice, II. 744.
 ANAGLYPH, II. 744.
 Anaglyptography, VIII. 810.
 ANAGNIA, now Agnani, in Italy, II. 744.
 ANAGNOSTA (John), Byzantine historian, II. 745.

ANA—ANA

ANAGNOSTES, II. 745.
 ANAGOGE, II. 745.
 ANAGRAM, II. 745.
 ANAGROS, Spanish grain-measure, II. 745.
 Anahuac, ancient name of Mexico, II. 683—plateau of, XIV. 714, 715.
 Anahuattels, II. 683.
 ANAITIS, an Armenian divinity, II. 745.
 ANAK, II. 745.
 Analcime, mineral, XV. 75—double refraction of, XVI. 542, 661.
 ANALECTA, II. 745.
 ANALEMMA, II. 745; VII. 773; III. 793.
 Analemmatic dial, VII. 792.
 ANALEPSIS, II. 745.
 ANALEPTICS, II. 745.
 ANALOGY, II. 745—Butler on, VI. 32—Socrates fond of teaching by, XX. 399.—in grammar, II. 746.
 ANALYSIS, II. 746—Condillac on, VII. 236, 237—algebraic, II. 482—logical, XIII. 577—its application to electricity, VIII. 531—ancient geometrical, XX. 300. See Geometry, new.
 Analytical Geometry, X. 542.
 ANAM, or An-nam, in south-east of Asia, II. 746.
 Anamesite rock, XV. 133.
 ANAMNESIS, II. 746.
 ANAMORPHOSIS, II. 746.
 ANAMOUR (Cape), II. 746.
 Anampses, genus of fishes, XII. 267.
 Anan, kind of wood, XX. 173.
 Ananchidæ, echinoderms, XXI. 991.
 Ananchytes, fossil echinoidea, XVII. 100, 99.
 ANANCITIS, II. 746.
 ANANIAS, II. 746.
 ANANISABTA, II. 746.
 ANAPÆST, II. 746; IX. 770.
 Anapera, genus of insects, IX. 259.
 ANAPHORA, II. 746.
 ANAPHRODISIA, II. 746.
 Anaplognathides, family of insects, IX. 123.
 ANARCHY, II. 746.
 Anartacus, genus of mammalia, XIV. 230.
 Anarthichas, genus of fishes, XII. 309, 310—the teeth and jaws of, XVI. 424, 425.
 Anas, genus of birds, XVI. 818.
 ANASARCA, II. 746; XVII. 690.
 Anaspis, genus of insects, IX. 134.
 ANASTASIUS I. and II., Emperors of the East, II. 746.
 — Bibliothecarius, II. 747.
 Anastatic printing, XVIII. 553—in engraving maps, XXI. 336.
 Anastoma, fossil mollusks, XVII. 111.
 ANASTOMATICS, II. 747.
 ANASTOMOSIS, II. 747—of arteries, 792—of veins, 796.
 Anastomus, genus of fishes, XII. 245.
 — genus of birds, XVI. 800.
 ANASTROPHE, II. 747.
 Anatase, mineral, XV. 110.
 Anatellina, genus of mollusks, XV. 350.
 ANATHEMA, II. 747.
 Anatina, genus of mollusks, XV. 350.
 Anatinidæ, family of mollusks, XV. 350.
 ANATOCISMUS, II. 747.
 ANATOLIA, or Natolia, II. 747; XV. 829; III. 758—coast of, IV. 744.
 ANATOMY (human), II. 747—Dr Barclay on its nomenclature, IV. 443—its importance in drawing, VIII. 173—study of, by artists, XIV. 453—progress of, 460 *et seq.*—sub-divisions of, 463—nervous system, XVII. 672—history of, II. 748. See Surgery.
 — (COMPARATIVE), III. 74—application of palæontology to, XVII. 91—spinal cord of the salmon, 669—web in the foot of a frog, 692. See Animal Kingdom, and the various zoological articles; Palæontology, Odontology.
 — of Plants—the cells, V. 66—vessels, 69—nutritive organs, 76—leaves, 87—of the reproductive organs, 112.
 ANATOMY ACT, AND ANATOMICAL SCHOOLS, III. 114.
 Anauxite, mineral, XV. 79.
 ANAXAGORAS, III. 114; X. 497; XVII.

ANA—AND

803; XX. 370, 373, 382—his contributions to astronomy, III. 787, 788—his views on comets and the moon, I. 568, 569—on the quadrature of the circle, XX. 520.
 Anaxander, Greek actor, VIII. 140.
 ANAXARCHUS, a Grecian philosopher, III. 115.
 ANAXILAUS of Larissa, III. 115.
 ANAXIMANDER, a Greek philosopher, III. 115; XII. 459; XVII. 231—his map, X. 466—his knowledge of astronomy, III. 787; of geometry, X. 497.
 ANAXIMENES, a Greek philosopher, III. 115; X. 497; XII. 459—his astronomy, III. 787.
 — Greek historian, III. 115.
 ANAZARBUS, city of Cilicia, III. 115.
 ANBAR, town of Asia, III. 115.
 ANBERTKEND, Bramin book, III. 115.
 ANCA, Portuguese town, III. 115.
 Ancach, in Peru, XVII. 474.
 ANCASTER, in Lincolnshire, III. 115.
 ANCENIS, in France, III. 115.
 ANCESTORS, III. 115.
 Anchinea, genus of mollusks, XV. 336.
 ANCHISES, III. 115.
 Anchomenus, genus of insects, IX. 94.
 Anchonus, genus of insects, IX. 140.
 ANCHOR, III. 116—weighing anchor, XX. 18—expediency of testing, XIV. 290—improvements in the form and manufacture of, XX. 24—Rodgers', *ib.*—Trotmans', *ib.*
 — GROUND, III. 121.
 — in architecture, III. 122.
 Anchor escapement, VII. 8.
 Anchorella, genus of entozoa, XXI. 982.
 Anchovy, XII. 236, 237—on the coasts of Norway, XVI. 328—as an article of food, IX. 764—imports of, from Leghorn, XIII. 317—fishery, XX. 247.
 ANCHUSA, genus of plants, III. 122; V. 201.
 ANCHYLOSIS, III. 122.
 ANCIENT DEMESNE, III. 122.
 — history, XI. 542, 543.
 — wines, XXI. 882.
 ANCIENTY, III. 122.
 ANCILE, III. 122.
 ANCILLARIA, or Ancilla, genus of mollusks, III. 122; XV. 386—A. obtusa, *ib.*—fossil, XVII. 110.
 ANCHILON (J. P. Friederich), historian, III. 122—on the doctrines of the French and German schools of philosophy, I. 187.
 ANCLAM, III. 122. See Anklam.
 ANCONA, an Italian city, III. 122; XVII. 241—evacuation of, by the French, X. 214.
 ANCOURT (Florent Carton d'), III. 122.
 Ancrum Muir, battle of, XIX. 776.
 ANCUS MARCIUS, III. 122; XIX. 296.
 ANCYLOBLEPHARON, III. 122.
 Ancyloceras, fossil mollusks, XVII. 113.
 Ancyloglossus, genus of fishes, XII. 285.
 ANCYLOGLOSSUM, III. 123.
 Ancyloscelis, genus of insects, IX. 200.
 Ancylos, genus of mollusks, XV. 374.
 ANCYRA, III. 123. See Angora.
 ANDALUCIA, III. 123; XX. 493—climate of, 488.
 Andalusite, mineral, XV. 86.
 ANDAMAN ISLANDS, III. 124—language, XIII. 208; IX. 344—degraded state of the natives, I. 451.
 ANDANTE, in music, III. 125.
 ANDEGAVI, a Gallic tribe, III. 125.
 ANDELYS, in France, III. 125.
 ANDENA, III. 125.
 ANDENNE, town of Belgium, III. 125.
 ANDERAVIA, or Inderabia, Island, III. 125; XII. 372.
 ANDERNACH, III. 125.
 Andersen (Hans C.), his novels, XIX. 293, 696.
 ANDERSON (Adam), III. 125.
 — (ALEX.), mathematician, III. 125; X. 504.
 — (SIR EDMUND), III. 126.
 — (JAMES, LL.D.), III. 126—his culture of the bread-fruit, V. 301—his theory of rent, XVIII. 243, *n.*

AND—AND

ANDERSON (James W. S.), antiquary, III. 126.
 — (Prof. JOHN), founder of the Andersonian Institution, Glasgow, III. 126; X. 652—on evaporation, IX. 412, 413.
 — (ROBERT, M.D.), III. 127.
 — (Mr), his visit to Lake Ngami, XVI. 240.
 — on gunnery, XI. 103, 107.
 ANDES, III. 127; II. 668; XVII. 593—their geology, II. 670; VI. 542—snow level on, XVII. 602—their influence on the climate of South America, II. 671—were the chief seats of ancient American civilization, 683—the Deluge ascribed to the elevation of, VII. 720—of Bolivia, IV. 821—of Chili, VI. 542—of Colombia, VII. 133—of Ecuador, VIII. 386—silver mines of, XV. 235—of Peru, XVII. 470—height of, 644, 645—of La Plata, 776.
 — birth-place of Virgil, III. 132.
 Andesin, mineral, XV. 71.
 Andesite, rock, XV. 132.
 ANDOCIDES, an Athenian orator, III. 132.
 Ando-Peruvian tribes of South America, IX. 349.
 ANDORRE, or Andorra, republic of, III. 132.
 ANDOVER, town in Hampshire, III. 132.
 — in Massachusetts, III. 132; XIV. 340.
 ANDRADA (Diego de Payva d'), III. 132.
 ANDRADA E SYLVIA (Bonifacio José d'), III. 132.
 — (Antonio d'), his travels in Asia, III. 753.
 Andraceæ, sub-order of mosses, V. 217.
 ANDRÉ (John), III. 132, 670—execution of, XXI. 753.
 — (Père), on beauty, IV. 538.
 ANDREA DEL SARTO, III. 133; XVII. 66.
 — (GIOVANNI), canonist, III. 133.
 — (GIOVANNI), bishop of Aleria, III. 133.
 — of Pisa, III. 133. See Pisano.
 ANDRÉE (Johann), III. 133.
 ANDREANI (Andrea), wood-engraver, III. 133.
 — (Paul), aeronaut, II. 177.
 Andeanofskie islands, II. 464.
 ANDREAS, or Andre (St), town in Hungary, III. 133.
 — of Carystus, surgeon, XX. 811.
 ANDREASBERG, in Hanover, III. 133.
 ANDREINI (G. Battista), III. 133.
 ANDREINI (P. Fausto), III. 133.
 Andrena, genus of insects, IX. 198.
 Andrenetæ, section of insects, IX. 198.
 ANDREOSSY (Antoine-François), Comte d', III. 133—his description of hydraulic obelisks at Constantinople, III. 335—on the canal of Languedoc, XII. 113, 128.
 ANDRES (Juan), III. 134.
 ANDREW (St), III. 134—an order of knights, *ib.*; XIII. 120, 122—St Andrew's day, III. 134.
 ANDREWS (St), city, III. 134—railway company of, IX. 546—university of, III. 135; XXI. 472; colleges at, 473—university library, XIII. 403.
 — (Professor), of Belfast, his researches in thermo-electricity, XXI. 653.
 — (I. D.), his report on the lakes of Canada, VI. 138, 139.
 — (JAMES PETTIT), III. 136.
 — (LANCELOT), bishop, III. 137.
 — (Dr), his lock, XIII. 539.
 Andrez (Abbate), on the history of paper, XVII. 251.
 ANDRIA, a Neapolitan city, III. 137.
 ANDRIANTES, III. 137.
 ANDRIEU (Bertrand), III. 137.
 ANDRISCUS, III. 137.
 ANDROCLUS, III. 137.
 Androecium, or staminal organs in plants, V. 118, 126.
 ANDROGEOS, III. 137.
 ANDROIDES, III. 137.
 ANDROLEPSIA, III. 138.
 ANDROMACHE, wife of Hector, III. 138.
 ANDROMEDA, in astronomy, III. 138; IV. 80.

AND—ANG

Andromeda, genus of plants, III. 138; V. 221; XI. 748.
 ANDRONICUS I., Comnenus, III. 139.
 — II., Palæologus, III. 139.
 — of Cyrrha, III. 139.
 — of Rhodes, III. 139—his edition of Aristotle's works, III. 537.
 — (Livius), XIII. 527; VIII. 141—poetry of, XVIII. 104.
 ANDROPHAGI, III. 139.
 ANDROS, now Andro, island, III. 139.
 Andry and Thouret's report on the use of magnets in medicine, XX. 415.
 ANDRYCHOW, in Galizia, III. 140.
 ANDUJAR, a city of Spain, III. 140.
 ANDUZE, a town of France, III. 140.
 ANECDOTES, III. 140.
 Anegada, one of the Virgin Islands, XXI. 599.
 ANEL (Dominique), surgeon, III. 140.
 Anellida, fossil animals, XVII. 100.
 ANEMOMETER, III. 140; XIV. 651; XVIII. 65.
 Anemometry, XIV. 651.
 ANEMONE, genus of plants, III. 140; XI. 752.
 ANEMOSCOPE, III. 140; IV. 452.
 ANEMUR, III. 140.
 Anenchelum, genus of fossil fishes, XII. 345.
 ANEROID BAROMETER, III. 140; IV. 459—use of at sea, XX. 27.
 ANET, a French town, III. 140.
 ANEURISM, III. 140—ancient treatment of, XX. 814—John Hunter's operation for the cure of, 819—surgical treatment of, 828—in animals, XXI. 574.
 Anfrye's essaying furnace, III. 768, 769.
 ANGAR, island, III. 140.
 ANGARA, Upper and Lower, rivers, III. 140; XXI. 954.
 ANGARI, or Angarii, III. 140.
 ANGARIA, III. 140. See Angari.
 ANGAZYA, island, III. 140.
 ANGEIOTOMY, in surgery, III. 140.
 ANGEL, III. 140—hierarchy of angels, according to the Gnostics, III. 311, n. 1—notions of the Mohammedans respecting, XV. 302—the apocalyptic, XVIII. 481—of Jehovah, XXI. 209.
 — a gold coin, III. 141.
 Angel-fish, in Cornwall, VII. 408.
 ANGELICA, genus of plants, III. 141; XI. 745—fruit of, V. 195—used as food in Lapland, XIII. 235, 240.
 — library, at Rome, XIII. 412.
 ANGELICI, sect of heretics, III. 141.
 ANGELICS, an order of knights, III. 141.
 Angelin (M.), on the Silurian rocks of Scandinavia, XV. 197, 198.
 Angelini (B.), his work on insects, IX. 15.
 Angélique (Mère), of Port Royal, III. 668; XVIII. 376.
 ANGELO (Michael), III. 141. See Michael Angelo Buonarrotti.
 — (St), several towns and castles in Italy so named, III. 141.
 — (St), castle of, XIX. 365, and n. 4; 375.
 ANGELUS SILESTUS, III. 141.
 — (Isaac), emperor, III. 139; VII. 317.
 ANGER, III. 141—properly regulated, becomes a sense of justice, I. 407.
 ANGERBURG, a circle in Prussia, III. 141.
 Angerman, river, XX. 861.
 ANGERMANNLAND, III. 141.
 ANGERMUNDE, in Prussia, III. 141.
 ANGERONA, Roman deity, III. 142.
 ANGERS, in France, III. 142—population, X. 277.
 ANGERSTEIN (John Julius), III. 142.
 ANGHIERA, town in Lombardy, III. 142.
 ANGILBERT (St), III. 142.
 ANGINA PECTORIS, III. 142.
 Angionoma, vascular growth, XVII. 690.
 Angiospermous plants, V. 139, 237—reign of, in geological times, 237.
 ANGITIA, III. 142.
 Anglarite, mineral, XV. 101.
 ANGLE, III. 142; X. 507—of incidence, III. 143—of refraction, ib.—trisection of, ib.—solid, X. 532—angle formed by two inclined planes, XII. 807—instru-

ANG—ANI

ment for measuring the angles of crystals, XV. 50—joining angles, in joinery, XII. 809—Dollond on measuring small angles, VIII. 93, 94.
 Angle-berries, disease in animals, XXI. 579.
 Angler, fish. See Lophius.
 ANGLES, old German nation, III. 146.
 ANGLESEA, or Anglesey, island, III. 146; VIII. 754—cattle of, II. 343—earthenware filters, IX. 582—Druids in, VIII. 183.
 Anglesea (Arthur, earl of), III. 219.
 — (Marquis of), communications to, on Catholic emancipation, V. 654—lord-lieutenant of Ireland, XII. 501.
 Anglesite, mineral, XV. 105.
 Anglia, origin of the name, III. 146.
 ANGLING, III. 146—popularity of the pursuit, IX. 613—for charr, XII. 241—Isaac Walton's book on, XXI. 696—list of books on, III. 162–165.
 ANGLO-CALVINISTS, III. 165.
 Anglo-Norman Gothic architecture, III. 480.
 — castles, VI. 326.
 ANGLO-SAXON, III. 165—written characters of, II. 615—language, V. 374; VIII. 793—versions of the Scriptures, XIX. 840—institutions, VIII. 665—domestic habits, 666—military system, XV. 6, 7—Rask's grammar, XVIII. 808—thanes, XXI. 163—Turner's history of, 390.
 — population of America, II. 709.
 ANGLOS (Thomas), III. 165. See White (Thomas).
 ANGOLA, or Dongo, in Africa, III. 165; II. 227.
 ANGON, III. 166.
 ANGORA, in Asia, III. 166—goat of, XIV. 211; its wool, XXI. 906.
 — battle of, XXI. 368.
 ANGORNO, town in Central Africa, III. 166.
 ANGOSTURA, in South America, III. 166—congress of, in 1819, IV. 818.
 ANGOT, in Abyssinia, III. 166; II. 56.
 ANGOULEME, in France, III. 166.
 — Duke d', his Spanish expedition, X. 185; XX. 476.
 ANGOUMOIS, in France, III. 166; X. 277.
 ANGOY, III. 166.
 ANGRA, a city in Terceira, III. 166.
 ANGRI, a Neapolitan town, III. 167.
 Anguidæ, family of reptiles, XIX. 41.
 ANGUIER (François and Michel), III. 167.
 ANGUILLA, island, III. 167.
 — genus of fishes, XII. 232, 230—angling for *A. vulgaris*, III. 162.
 — genus of fossil fishes, XI. 347.
 ANGUILLARA (G. Andrea dell'), III. 167.
 Anguillidæ, family of fishes, XII. 232, 230.
 Anguilliformes, family of fossil fishes, XII. 347.
 Anguine Syren, XIII. 460. See Proteus anguinus.
 ANGUINUM OVUM, fabulous egg, III. 167; VIII. 188.
 Anguis, genus of reptiles, XIX. 41.
 ANGUS, county in Scotland, III. 167. See Forfar.
 — (Earl of), XIX. 767, 769, 770.
 ANGUSSOLA, four sisters, painters, III. 167.
 Angustestellati, echinoderms, XXI. 991.
 ANGUSTICLAVIA, III. 167.
 Angustura, tonic bark, V. 189.
 Anhæmia, disease of miners, XIII. 460.
 ANHALT, duchies of, in Germany, III. 167.
 ANHALT-BERNBURG, III. 167.
 ANHALT-CÆTHEN, III. 168.
 ANHALT-DESSAU, III. 168.
 ANHOLT, Danish island, III. 168.
 Anhydrite, mineral, XV. 96.
 ANIANI Breviarium, III. 168; VI. 743.
 Anianus (Flavius). See Avianus.
 ANICHINI (Luigi), III. 168.
 ANIELLO, III. 168. See Massaniello.
 Aniline, VI. 514.
 ANIMALS, III. 168—changes on European animals naturalised in America, II. 714—difficulty of defining the term, III. 168—wherein different from plants, 168, 169—chemical characters of, 170—substances of which composed, 171—har-

ANI—ANK

monious combination of their organs, 172—variety of organisation among, ib.—classification of, 182 *et seq.*; II. 771—of Linnæus, III. 184; Virey, ib.; Lamarck, 185; XIII. 162; Dumeril, III. 190; Blainville, ib.; Macleay, 191; Cuvier, 192—no change of species produced by time, climate, or other secondary causes, 173—geographical distribution of, XVII. 630; III. 174; II. 712—what constitutes a species, III. 174—hybrids, XII. 63; generally barren, ib.; III. 174—doctrine of equivocal generation, 175—brain and nervous system in different classes of, 176 (see Brain)—tenacity of life in certain kinds, ib. 177—insensibility to pain in many, ib.—senses of, 178—aliment of, 179—nature of the flesh in different classes, ib.—power of enduring abstinence from food, 180; II. 50—food of, 418—hibernation of, III. 180; XII. 62—paving, III. 181—obscure case of animal and vegetable life combined, 198, 200—electricity of, VIII. 570—worship of, in Egypt, 439; XV. 765—effects of electricity on, VIII. 610—effects of light on, XIII. 460—light emanating from, 458—hieroglyphic symbols of, XI. 392—figures of, borne on arms, 331, 332, 333—hospital for, 470—adaptation of their covering to the climate they inhabit, 262—Gesner's history of, IX. 597—kinds used as human food, 761—strength of, XIV. 416, 417—duty we owe to, XV. 566—definition of the term, XVII. 91—geological succession of, 92—total number known, 631—form of seminal particle in, 683—fecundation, ib.—modes of propagation, 688—development of the ova in, 684—necessity of air to, XVIII. 72—their tendency to increase in a geometrical progression, 338—superiority of small animals in strength and agility, XX. 770—effects of galvanism on, XXI. 609, 634—extinct (see Palæontology)—of America, II. 713—Arabia, III. 345—Assam, 764—Canada, VI. 142—Europe, IX. 387. See the geographical articles; also Zoology, Ichthyology, Ornithology, Mammalia, Odontology, Palæontology, &c.
 Animal bodies, characteristics of, II. 771—chemistry of, VI. 501 *et seq.*, 521—more easily dyed than vegetable, VIII. 274—effects of electricity on, 601.
 — FLOWER, III. 168.
 — food, VIII. 23; IX. 761—preservation of, 767.
 — heat, XVII. 665.
 — MAGNETISM, III. 193; XX. 413.
 — manures, II. 407.
 — mechanics, as applied to medicine, XIV. 461.
 — KINGDOM, III. 168—Cuvier's work on the, VII. 605.
 — oils, XVI. 492, 493.
 — poisons, XIV. 439.
 ANIMALCULE, III. 193—patches of the ocean coloured by animalcules, XVII. 574—cretaceous formations composed of, 588—as microscopic objects, XIV. 806—Spallanzani on, XX. 496, 497—intestinal, XXI. 975.
 ANIMATION, III. 213—of style, XIX. 141.
 ANIME, a resin, III. 213—its use in making varnish, XXI. 526.
 ANIMETTA, III. 213.
 ANTO, now Teverone, river, III. 213.
 ANISE, an umbelliferous plant, III. 213.
 Aniseed, oil of, XVI. 497.
 ANISO, III. 213.
 Anisomera, genus of insects, IX. 227.
 Anisonyx, genus of insects, IX. 126.
 ANJAR, in Hindustan, III. 213.
 ANJENGO, in Hindustan, III. 213.
 ANJOU, in France, III. 213; X. 277—dukes of, XI. 571; XVIII. 143.
 Anka, Egyptian deity, VIII. 436.
 ANKER, liquid measure, III. 213.
 Ankerite, mineral, XV. 100.
 Ankerstrom, assassin, V. 543; XX. 859.
 ANKLAM, a circle in Prussia, III. 213.

ANK—ANO

Ankle-joint, III. 37—surgical treatment of its dislocation, XX. 826.
 ANKOBAR, in Abyssinia, III. 213.
 Anlaff, VIII. 658.
 ANN, or Annat, in law, III. 213.
 ANNA, or Ana, an Arabian town, III. 213.
 — COMNENA, daughter of Alexius Comnenus I., III. 213.
 — IVANOVNA, empress of Russia, III. 214.
 — PERENNA, ancient divinity, III. 214.
 ANNABERG, German city, III. 214.
 ANNAGH, island, III. 214.
 ANNALS, III. 214—of Tacitus, XXI. 4—in what respects different from history, ib.—Hailes' Annals, VII. 634.
 ANNAMABOE, on the Gold Coast, III. 215; XI. 89.
 ANNAN, in Dumfriesshire, III. 215; VIII. 238.
 — river, III. 215; XVI. 87; XIX. 790—close-time in, IX. 613.
 ANNAND (William), dean of Edinburgh, III. 216.
 ANNAPOLIS, town in Maryland, III. 216; XIV. 331—Washington's resignation at, XXI. 753—naval academy at, 430—convention at, 437.
 — county, town, and river of Nova Scotia, III. 216; XVI. 343.
 ANNE, queen of Great Britain, III. 216—reign of, V. 447—her death and character, 452—her navy, XVI. 93—newspaper press under, 183—Ireland in her reign, XII. 492—act for consolidating the post-office, XVIII. 406.
 — BOLEYN, queen of Henry VIII., III. 217; VII. 482; VIII. 699, 701.
 — of Cleves, queen of Henry VIII., VIII. 704.
 — empress of Russia, XIX. 481.
 ANNE'S (St) day, III. 217.
 ANNEALING, III. 218—of metals, VII. 92; XX. 756—of the specula of telescopes, XXI. 135.
 ANNECY, in the kingdom of Sardinia, III. 219; XIX. 633, 640.
 ANNELIDES, or Annelida, class of articulated animals, III. 219, 192; XI. 290, 293, and n. 1—works on, ib. See Helminthology.
 ANNESLEY (Arthur), III. 219.
 — (Maurice), V. 456.
 ANNEXATION, III. 219.
 ANNIVERSARY, III. 219.
 ANNOBOM, African island, III. 219.
 ANNONÆ PRÆFECTUS, III. 220.
 ANNONAY, a town of France, III. 220.
 Annotta. See Anotta.
 ANNUALRENT, III. 220.
 Annual plants, XI. 750; V. 77; III. 171.
 — rings, in trees, XXI. 268.
 — means, in meteorology, XIV. 664.
 Annuitants, their lives not so select as is generally supposed, III. 225.
 ANNUITIES, III. 220—tables of, 251—application of algebra to the calculation of, II. 536; III. 242—Government loss by, V. 651—expectation of life in different countries, XII. 395; XVIII. 351, 353; in England, 355—purchasable by savings banks, XIX. 667. See Life Assurance, Probability.
 Annuity-Tax in Edinburgh, VIII. 398.
 ANNULAR, III. 257—crystal, ib.—eclipse, ib.; IV. 44, 48—lenses, XIII. 472.
 ANNULARIA, fossil genus of plants, III. 257.
 ANNULET, III. 257—in architecture, 50—in heraldry, XI. 326, 330—in joinery, XII. 808.
 ANNULOSA, a primary division of the animal kingdom, III. 257, 191; IX. 60.
 ANNUNCIADA, order of knighthood in Savoy, III. 257.
 Annulus and annulate, in botany, V. 143.
 ANNUNCIATION, III. 257; VI. 667.
 ANNUS DELIBERANDI, III. 257.
 ANOA, a quadruped, III. 257.
 Anobium, genus of insects, IX. 112.
 Anodon, genus of mollusks, XV. 349.
 ANODYNE, III. 257.
 Anolius, genus of reptiles, XIX. 34.

ANO—ANT

ANOMALISTICAL YEAR, III. 257.
 ANOMALOUS, III. 257.
 Anomia, genus of mollusks, XV. 348, 347.
 ANOMOEANS, III. 257.
 Anonaceæ, nat. order of plants, V. 180.
 ANONYMOUS, III. 257—books, IV. 711.
 Anopheles, genus of insects, IX. 225.
 Anoplus, genus of fishes, XII. 277.
 ANOPLOTHERIUM, genus of fossil mammals, III. 257; XVII. 164—teeth of, XVI. 465.
 ANORTHITE, mineral, III. 257; XV. 1.
 ANOSMIA, III. 257.
 Anostoma, genus of mollusks, XV. 373.
 Anotia, genus of insects, IX. 169.
 ANOTTA, or Arnotto, a dye, III. 257; VIII. 296; II. 86; V. 183—used to colour cheese, VII. 625; and silk, IV. 770—in Guiana, XI. 82—imports of, VIII. 734—order of plants, V. 183.
 Anous, genus of birds, XVI. 813.
 ANQUETIL (Louis Pierre), III. 258.
 — DU PERRON (Abraham Hyacinthe), III. 258.
 ANSÆ, in astronomy, III. 259.
 Ansairêyeh, Syrian sect, XX. 908.
 Ansanto, lake, XX. 239.
 ANSARIANS, people of Syria, III. 259.
 ANSBACH, in Bavaria, III. 259.
 ANSE, ancient French town, III. 259.
 ANSELM (St), archbishop of Canterbury, III. 259; I. 325; VIII. 669—on the existence of God, XXI. 187.
 — OF LAON, III. 260; II. 26.
 Anser, genus of birds, XVI. 816.
 ANSON (George, Lord), III. 260—his expedition to the South Seas, V. 459; XVI. 106—his visit to the Ladrone Islands, XIII. 150; XVIII. 269—narrative of his voyage, XIX. 235.
 — (General), XVI. 303.
 Ansted's arrangement of rock formations, V. 233—his manual of geographical science, XVII. 642.
 ANSTEY (Christopher), comic writer, III. 260.
 Anstone, building-stone, XX. 712.
 ANSTRUTHER (Easter and Wester), in Fifeshire, III. 260, 261.
 ANT, III. 261; IX. 193; XVII. 637—acid of the red ant, VI. 627.
 — amazon, III. 266.
 — parasol, XVII. 637.
 — white, or Termes, II. 218; IX. 179; XVII. 637.
 ANT-EATER, III. 266; XIV. 191, 192; XVII. 631—its teeth, III. 105; XVI. 413, 414, 440.
 ANT-HILLS, III. 266, 263.
 Ant-Ilon, IX. 178—Bonnet's investigation of its habits, V. 8.
 ANTACIDS, III. 266.
 ANTÆ, in architecture, III. 266, 487, 502.
 ANTÆOPOLIS, ancient city on the Nile, III. 266.
 ANTÆUS, giant, III. 266; XIV. 360.
 Antalcidas, peace of, XX. 501; XXI. 177.
 ANTALO, Abyssinian town, III. 266.
 ANTANACLASIS, III. 266.
 ANTANAGOGUE, III. 266.
 Antandrus, VI. 284.
 Antao (St), one of the Cape Verde Islands, XXI. 543, 544.
 ANTAR, III. 266.
 ANTARCTIC, III. 267—polar regions, XVIII. 181—pole, X. 481—ocean, XVII. 576—botanic region, V. 228.
 ANTARES, star, III. 267; IV. 79.
 ANTEAMBULONES, III. 267.
 Antecedent, in grammar, X. 757, 758—in geometry, 517.
 ANTECESSOR, III. 267.
 ANTECURSORES, III. 267.
 ANTEDILUVIANS, III. 267.
 Antefixæ, in architecture, III. 507.
 ANTEGO, III. 268. See Antigua.
 ANTEJURAMENTUM, III. 268.
 Antelopus, genus of fishes, XII. 270.
 Antelme (Adr.), his work on insects, IX. 22.
 ANTELOPE, III. 268; XIV. 210—number of species, XVII. 632—African, II. 217—Indian, XI. 455.

ANT—ANT

ANTELUCAN, III. 268.
 ANTEMNÆ, ancient city of Latium, III. 268.
 ANTEMURALE, III. 268.
 ANTENATI, III. 268.
 ANTENCLEMA, III. 268.
 Antennæ of insects, IX. 36—their functions in ants, III. 262; and in bees, IV. 574.
 — of the crustacea, VII. 537—of myriapods, XV. 747.
 ANTENOR, Athenian sculptor, III. 268.
 — Trojan prince, III. 268.
 ANTEPILANI, III. 268.
 ANTEQUERA, in Spain, III. 268.
 ANTEROS, one of the two Cupids, III. 268; VII. 590.
 ANTESIGNANI, III. 268.
 ANTESTARI, III. 268.
 ANTHELMINTICS, III. 268.
 ANTHEM, III. 268.
 ANTHEMIS, a genus of plants, III. 268; V. 197.
 ANTHEMIUS, Roman architect, III. 268—his plan of the dome of the church of St Sophia at Constantinople, 402—on Archimedes' burning mirrors, VI. 4.
 Anther, in botany, V. 118, 126.
 Antheridia, V. 143, 145.
 ANTHESPHORIA, ancient Sicilian festival, III. 268.
 ANTHESTERIA, Athenian festival, III. 268.
 ANTHESTERION, the eighth month of the Athenian year, III. 269.
 Anthia, genus of insects, IX. 81.
 Anthlacum, genus of insects, IX. 199.
 Anthias, genus of fishes, XII. 275, 276.
 Anthicides, tribe of insects, IX. 134.
 Anthidium, genus of insects, IX. 200.
 Anthobii, section of insects, IX. 126.
 Anthocephalus, genus of zoophytes, XXI. 978.
 Anthocrinus, fossil echinoderms, XVII. 98.
 ANTHOLOGION, III. 269.
 ANTHOLOGY, III. 269.
 Anthomyia, genus of insects, IX. 250.
 ANTHONY (Saint), III. 269; XV. 406—knights of, III. 269—St Anthony's fire, III. 269; IX. 329.
 Anthophila, family of insects, IX. 198.
 Anthophora, genus of insects, IX. 100.
 ANTHOPHORUM, in botany, III. 269.
 Anthophyllite, XV. 81.
 ANTHORISMUS, in rhetoric, III. 269.
 Anthosiderite, mineral, XV. 90.
 Anthosoma Smithii, VII. 543.
 Anthozoa, fossil polypes, XVII. 96.
 — zoophytes, XXI. 1002.
 ANTHRACITE, III. 269; IV. 782; VII. 118; 471; XV. 123, 149—area of, in Pennsylvania, VII. 127; XVII. 395—in Kentucky, XIII. 84—employed in reducing iron ores, XII. 544—evaporative power of, XX. 653—its value as fuel, 353.
 — furnace, III. 769.
 Anthraconite, XV. 92.
 Anthracosia, fossil mollusks, XVII. 108.
 ANTHRAX, III. 269—genus of insects, IX. 233.
 Anthrenus, genus of insects, IX. 115.
 Anthribus, genus of insects, IX. 138.
 ANTHROPOGLOTTUS, III. 269.
 Anthropoides, genus of birds, XVI. 798.
 Anthropological argument for the existence of God, XXI. 186.
 ANTHROPOLOGY, III. 269; IX. 341; XXI. 184, 196. See Man.
 ANTHROPOMORPHISM, III. 269; I. 109, n. 2.
 ANTHROPOMORPHITES, ancient heretics, III. 269.
 ANTHROPOMORPHOUS, III. 269.
 ANTHROPOPHAGI, III. 269. See Cannibal.
 Anthus, genus of birds, XVI. 757.
 ANTHROPHORA, in rhetoric, III. 270.
 ANTI, III. 270.
 ANTIARINE and ANTIARIS, III. 270.
 ANTIBACCHUS, a foot in ancient poetry, III. 270.
 ANTIBES, French seaport, III. 270.
 Antiburghers, XVIII. 499—division among them, XIII. 758—their reunion with the burghers, 500.

ANT—ANT

ANTICHRIST, III. 270.
 ANTICHTHONES, III. 271.
 ANTICIPATION, in music, III. 271.
 ANTICLIMAX, in rhetoric, III. 271.
 Anti-corn-law league, XIV. 256.
 Anticor, disease in animals, XXI. 557.
 ANTICOSTI, island, III. 271.
 ANTICUM, III. 271.
 ANTICYRA, name of three cities of ancient Greece, III. 271.
 ANTIDESMA, genus of plants, III. 271.
 ANTIDORON, III. 271.
 ANTIDOSIS, III. 271.
 Antidotes to poisons, XIV. 432 *et seq.*; XVIII. 133.
 ANTIGALACTIC, III. 271.
 ANTIGONUS I., III. 271; VIII. 468.
 — II. (GONATAS), III. 272; IV. 172.
 Antigorite, mineral, XV. 80.
 ANTIGRAPHUS, III. 272.
 ANTIGUA, island, III. 272.
 — (La), city in Guatemala, XI. 78.
 ANTILEGOMENA, III. 272.
 Anti-Libanus, XVII. 182; XX. 903.
 ANTILLES, or Caribbee islands, III. 272—Greater and Lesser, XXI. 837—serpents of, XIX. 54.
 ANTILOGARITHM, III. 272.
 ANTILOGY, III. 272.
 ANTILOMICS, III. 272.
 Antelope, genus of mammalia, XIV. 209—fossil, XVII. 170.
 ANTIMENSIUM, III. 272.
 ANTIMERIA, III. 272.
 Antimonic acid, VI. 494; XV. 61.
 Antimonious acid, XV. 61.
 Antimonite, XV. 119.
 ANTIMONY, III. 272; VI. 494; XV. 65, 114—white, 112; ores, *ib.*—oxide, 61—localities producing, 246; XVII. 622—in galena, XIII. 299—sometimes poisonous, XIV. 434—specific gravity of, XII. 88—in Chile, VI. 548—in Scotland, XIX. 790.
 — ore, gray, XV. 118.
 Antimony-ochre, XV. 112.
 Antimony-silver, XV. 113.
 Antinoë, ruins of, VIII. 504.
 ANTINOMIANS, III. 273—Gnostic antinomians, I. 521; their corruptions of Christianity, *ib.*—their theory of moral distinctions, XV. 543.
 ANTINOUS, III. 273.
 ANTIOCH, III. 273; XX. 901, 910—aqueeduct at, III. 334—mundane era of, VI. 671—Cæsarean era of, 672—coins of, XVI. 379—earthquake at, XVII. 616.
 — in Pisidia, III. 275.
 — ad Taurum, now Aintab, III. 275; II. 430.
 ANTIOCHIAN, sect and epocha, III. 275.
 ANTIOCHUS, a dynasty of Syrian kings, III. 275.
 — SOTER, III. 275.
 — the Great, VIII. 469—his war with the Romans, XIX. 312, 314.
 — of Ascalon, philosopher, III. 275.
 — Epiphanes, III. 275—his invasion of Egypt, VIII. 469—his treatment of the Jews, XII. 732, 768; XVII. 193—Jerusalem laid waste by, XII. 733.
 ANTIOPE, III. 275.
 ANTIPÆDOBAPTISTS, III. 275; II. 741.
 ANTIPAROS, island, III. 275.
 ANTIPAS HEROD, III. 275; XII. 770.
 Antipastus, in Prosody, IX. 770.
 ANTIPATER, III. 275; XIII. 773 *et seq.*
 — an Idumean, III. 276; XII. 770.
 — Cælius, III. 276.
 — of Sidon, III. 276.
 Antipatharia, zoophytes, XXI. 1004.
 ANTIPATHY, III. 276—therapeutical system, XI. 606, 607.
 ANTIPHILUS of Egypt, painter, III. 276.
 ANTIPHLOGISTIC regimen, III. 276—theory, VI. 352—in veterinary science, XXI. 555.
 ANTIPHON, III. 277.
 — geometer, X. 498—on the quadrature of the circle, XX. 520.
 ANTIPHONARY, III. 277.
 ANTIPHONY, III. 277.

ANT—ANU

ANTIPODES, III. 277; X. 485.
 ANTIQUARI, monks, copiers of old books, III. 277.
 ANTIQUARY, III. 277—Scottish Society of Antiquaries, VIII. 397—Society of, London, XIII. 674.
 ANTIQUE, III. 277.
 ANTIQUITIES, III. 277—academies of, II. 69—pleasure from the study of, IV. 545—in the British Museum, XIII. 674—of Greece, XI. 21—Indian, II. 696—Central America, XI. 77—Mexico, XIV. 719—Cornwall, VII. 408—Devonshire, 764—their relation to philology, XI. 527—Roman, XIX. 367. See Rome. See Medals, Athens, Egypt, &c.
 ANTIRRHINUM, a genus of plants, III. 277.
 ANTISABBATARIANS, modern religious sect, III. 277.
 ANTISCI, III. 277.
 ANTISEPTICS, III. 277; IX. 767; XIX. 621.
 Antisian, tribes of South America, IX. 349.
 ANTISPASMODICS, III. 278.
 ANTISTASIS, in oratory, III. 278.
 ANTISTHENES, Greek philosopher, III. 278; I. 316; VII. 608; XVII. 791—his admiration of Socrates, XX. 379.
 ANTISTROPHE, III. 278.
 ANTITACTÆ, sect of Gnostics, III. 278.
 ANTITHESIS, in rhetoric, III. 278.
 ANTITRINITARIANS, III. 278.
 ANTITYPE, III. 278.
 ANTUM, city of the Volsci, III. 278.
 ANTIVARI, III. 278.
 Antlers, XIV. 203; XVII. 171.
 ANTILA, an ancient machine, III. 278.
 — the proboscis of lepidopterous insects, III. 278.
 ANTÆCI, III. 278; X. 485.
 ANTOINE (St), town of France, III. 279.
 ANTONELLO da Messina, III. 279.
 ANTONIA, fortress in Jerusalem, III. 279; XII. 733, 744.
 ANTONIAN WATERS, III. 279.
 ANTONIANO (Silvio), III. 279.
 ANTONIDES (Hans), Vander Goes, Dutch poet, III. 279.
 ANTONIN (St), town of France, III. 279.
 ANTONINI ITINERARIUM, III. 279; X. 463.
 ANTONINUS LIBERALIS, III. 279.
 — MARCUS AURELIUS, the philosopher, Roman emperor, III. 279—reign of, XIX. 344—his patronage of science, XIV. 454—English translation of his Meditations, XV. 526.
 — Prus, Roman emperor, III. 280—reign of, XIX. 343—his account of the Christians, VI. 641—condition of the Jews under, XII. 775; XVII. 195.
 ANTONINUS'S WALL, III. 281; V. 379.
 ANTONIO (Nicholas), III. 282.
 — (Dom), prince of Portugal, XVIII. 384.
 — bishop of Spalatro, XIII. 449.
 — (Port) in Jamaica, XII. 677.
 ANTONIUS (Marcus), Roman orator, III. 282.
 — (MARCUS) triumvir, III. 282; VI. 763; XIX. 328 *et seq.*—his rule in Egypt along with Cleopatra, VIII. 471—his war against the Parthians, XVII. 312.
 ANTONOMASIA, III. 283; XIX. 134.
 ANTOSIANDRIANS, a Lutheran sect, III. 283.
 ANTRIM, county in Ireland, III. 283—town, 286—basalt of, XV. 190—agricultural statistics of, XII. 516, 517.
 Antrimolite, mineral, XV. 75.
 ANTWERP (Anvers, in French), III. 286—commerce of, VII. 188; IV. 598—polyglot Bible of, 697; XVIII. 266—bombardment of, in 1830, IV. 606—siege of its citadel in 1832, 610; IX. 826; X. 208—taken by the Duke of Parma, XI. 571—Royal Academy of the Fine Arts at, IV. 622—railways, XI. 582—laid waste by the Spanish troops, 569—pliocene rocks near, XV. 215—works of Rubens at, XIX. 459.
 Antyllus on surgery, XX. 813.
 ANURIS, or Anup, Egyptian deity, III. 287; VIII. 439; XI. 386.

ANU—APH

- Anus, muscles of the, III. 39.
 ANVIL, III. 288; V-anvil, XII. 564—anchor-smiths', III. 120.
 ANVILLE (J. B. Bourguignon d'), III. 289—on the extent to which the ancients were acquainted with the coasts of Africa, II. 209—his contributions to geography, X. 473.
 ANWARI, Persian poet, III. 290.
 ANWEILER, in Landau, III. 290.
 Anytis, Egyptian king, XI. 389.
 Anytus, one of the accusers of Socrates, XX. 380, 392, 395.
 ANZIN, French village, III. 290.
 Anzuan, island, XII. 789.
 Aodon, genus of mammalia, XIV. 231.
 AORIST, tense of Greek verbs, III. 290; X. 765.
 AORISTIA, III. 290.
 Aorta, anatomy of, III. 65—distribution of its branches, *ib.*—its anatomical connections, II. 791—tying of the, XX. 829, *n.*
 AOSTA, town and province of Piedmont, III. 290; XVII. 707.
 APÆDUSIA, III. 290.
 APAGOGUE, III. 290.
 APAGOGICAL DEMONSTRATION, III. 290.
 APAGON, a genus of fossil fishes, III. 290.
 APAGYNOUS plants, III. 290.
 APALACHIAN mountains, III. 290. See Appalachian Mountains.
 APAMEA, name of several ancient cities of Asia, III. 290.
 APANAGE, III. 290.
 Apatelite, mineral, XV. 97.
 Apateon, genus of fossil reptiles, XVII. 133.
 APATHY, III. 290.
 APATITE, mineral, III. 291; XV. 98—commission sent to examine it in Estremadura, II. 415—crystallization of, VII. 561.
 Apatura, genus of insects, IX. 208.
 APATURIA, Athenian feast, III. 291.
 APAULIA, III. 291.
 APAUMEE, in heraldry, III. 291.
 APE, III. 291; XIV. 137—apes at Gibraltar, X. 619.
 A-PEAK, sea-term, III. 291.
 APEL, or Apellus (Johann), III. 291.
 APÉLLES, III. 291—his style of painting, XVII. 55.
 APÉLICON of Teos, III. 292—the works of Aristotle preserved by, 536.
 APÉLITES, heretics of second century, III. 292.
 APENNINES, III. 292; IX. 382; XII. 635; XVII. 241; XX. 235; XXI. 392—heights of, XVII. 642; XX. 235—geology of, *ib.*—barley and oats extensively grown on, XXI. 394.
 APENRADE, city in Schleswick, III. 293.
 Apep or Apophis, Egyptian deity, VIII. 438.
 APER, the wild boar, III. 293; XIV. 797.
 APÉRIENT, III. 293.
 APÉRTURE, in geometry, III. 293.—in optics, III. 293; XVI. 554.
 Apetalæ, sub-class of plants, V. 203.
 APÉTALOSE, plants, III. 293.
 APÉX, III. 293, 294.
 APHERESIS, III. 294.
 Aphanese, mineral, XV. 103.
 Aphanisticus, genus of insects, IX. 105.
 Aphanite, rock, XV. 135.
 Aphareus, genus of fishes, XII. 288.
 APHEK, name of several cities in Scripture, III. 294.
 APHELIUM, or Aphelion, III. 294; XVII. 413.
 Aphidii, family of insects, IX. 170.
 Aphidiphagi, family of insects, IX. 151.
 APHIOM, Karahissar, III. 294. See Afium.
 APHIS, plant-louse, III. 294; IX. 171—sucked by ants, III. 263—Bonnet on the propagation of, V. 8—woolly aphid, XI. 716.
 APHILASTON, III. 294.
 Aphlochiton, genus of fishes, XII. 248.
 Aphlodactylus, genus of fishes, XII. 277.
 APHLOGISTIC, III. 294.
 Aphodius, genus of insects, IX. 120.

APH—APO

- APHONIA, III. 294.
 APHORISM, III. 294.
 APHERACTI, III. 294.
 Aphrite, XV. 92.
 Aphritis, genus of fishes, XII. 273.
 APHRODISIAS, name of several ancient cities, III. 294.
 Aphrodita, genus of annelides, XI. 299, 291.
 APHRODITE, III. 294.
 APHTHARTODOCETÆ, III. 294.
 APHTHONG, III. 294.
 APHTHONUS, of Antioch, III. 294.
 Aphthous thrush, disease in animals, XXI. 564.
 APHYLLOUS, leafless plants, III. 294.
 Apiaceæ, an order of plants, V. 195.
 APIAN (Peter), III. 294.
 Apiaria, section of insects, IX. 198.
 APIARY, III. 294; IV. 586.
 APICIUS, III. 296.
 APINGADAM, Dutch town, III. 296.
 Apioceras, fossil mollusks, XVII. 112.
 Apiocrinus, fossil echinoderms, XVII. 98, 99.
 APION, III. 296—genus of insects, IX. 138.
 APIS, Egyptian deity, III. 296; XI. 385.—genus of insects, IX. 203.
 Apistes, genus of fishes, XII. 281, 283.
 APIUM, a genus of umbelliferous plants, III. 297.
 Apjohn (Dr), cases of human combustion related by, VII. 166.
 Aploactis, genus of fishes, XII. 283.
 Aplysia, genus of mollusks, XV. 371, 364 *et seq.*—ova of, 390.
 Apneusta, order of mollusks, XV. 369.
 APO, III. 297.
 APOCALYPSE, III. 297. See Revelation, Book of.
 Apocarpous pistil, in botany, V. 130.
 APOCOPE, III. 297.
 APOCRISIUS, III. 297.
 APOCRUSTICS, III. 297.
 APOCRYPHA, III. 297; XIX. 833—of the New Testament, XII. 761—controversy respecting its circulation, IV. 703; XXI. 233—regarded as canonical by papists, XVIII. 337.
 Apocryptes, genus of fishes, XII. 306.
 APOCYNÆ, or Apocynaceæ, nat. order of plants, III. 298; V. 199.
 Apoda, order of zoophytes, XXI. 896.
 APODECTÆ, III. 298.
 Apoderus, genus of insects, IX. 138.
 Apodes, sub-order of fishes, XII. 268.—lemniscati, sub-order of fishes, XII. 229.—anguiformes, sub-order of fishes, XII. 231.—arthropterygii, sub-order of fishes, XII. 234.
 APODICTIC, III. 298.
 APODYTERIA, III. 298.
 APOGEE, in astronomy, III. 298; XVII. 413.
 Apogenoides, genus of fishes, XII. 288.
 Apogon, genus of fishes, XII. 275—of fossil fishes, 343.
 APOKERUXIS, III. 298.
 Apolectus, genus of fishes, XII. 297.
 Apolemia, genus of zoophytes, XXI. 1000, 1006.
 APOLLINARIAN GAMES, III. 298.
 APOLLINARIANS, ancient heretics, III. 298.
 APOLLINARIS (Sulpicius), III. 299.—SIDONIUS (C. Sollus), III. 299.
 Apollinopolis magna, temple of, III. 458; VIII. 513; XI. 382, and *n.* 2.
 APOLLO, III. 299; VII. 708—oracles of, XVI. 698—oracle of, at Delphi, VII. 709.—BELVEDERE, statue, III. 299; VIII. 172; XIX. 369.
 APOLLODORUS, Athenian painter, III. 300; XVII. 53.—of Carystus, comic poet, III. 300.—tyrant of Cassandria, III. 300.—of Gela, Sicilian poet, III. 300.—the Athenian, III. 300.—of Pergamos, III. 300.—epigrammatic poet, III. 300.—architect, III. 300.—disciple of Socrates, XX. 392, 394.

APO—APP

- APOLLONIA, city of Illyricum, III. 300.—festival, III. 300.
 APOLLONICON, III. 300; XVI. 713.
 APOLLONIUS of Alabanda, III. 300.—Dyscolus, III. 300; XVII. 520.—of Perga, III. 300; VII. 348; X. 501, 503—his profound researches in mathematics, I. 551—on conic sections, VII. 249, 250—extended notation proposed by, III. 576—his contributions to astronomy, 792—his introduction of the epicycle, I. 598; III. 790—editions of his works, 303—first formed the alliance between geometry and astronomy, 790—Simson's restorations of his works, XX. 300, 301—on the quadrature of the circle, 521.—author of the Argonautics, III. 303; XVIII. 103.—of Tralles, one of the sculptors of the Farnese bull, III. 303.—sophist, III. 303.—of Tyana, III. 303—life of, by Philostratus, XVII. 543.
 APOLLOS, III. 304.
 APOLLYON, III. 304; II. 9.
 Apologists, in the primitive church, IX. 491.
 APOLOGUE, III. 304; IX. 461.
 APOMYOS, heathen gods, III. 304.
 APOXO (Peter d'), III. 304.
 APOFEMTIC, III. 304.
 APOPHORETA, III. 304.
 APOPHTHEGM, III. 304.
 Apophyge, in architecture, III. 507.
 APOPHYLLITE, mineral, III. 304; XV. 76—optical properties of, XVI. 542, 661, 663.
 APOPLEXY, III. 304; XIV. 436; XVII. 700—in horses, XXI. 575.
 APORIA, in rhetoric, III. 304.
 Aporus, genus of insects, IX. 195.
 APOSIOPESIS, in rhetoric, III. 305.
 APOSPHRAGISMA, III. 305.
 Apostasiaceæ, nat. order of plants, V. 211.
 APOSTASY, III. 305.
 A POSTERIORI, III. 305, 327.
 APOSTLE, III. 305—Acts of the Apostles, II. 118; XIII. 718—the apostles of Jesus Christ have no successors, I. 501, 487—spurious acts of the Apostles, II. 118; III. 298—the question of Peter's supremacy among the apostles, XVII. 481 *n.*, 482—manner in which the apostles speak of Christ, XXI. 210.
 APOSTLES' CREED, III. 305; I. 493.
 APOSTOLEIS, III. 306.
 APOSTOLIANS, sect of Mennonites, III. 306.
 APOSTOLIC, III. 306—churches, independent of each other, I. 487.
 APOSTOLICAL FATHERS, III. 306—constitutions, VII. 322.—succession, how to be understood, I. 503.
 APOSTOLICI, or Apostolics, III. 306.
 APOSTOLICUM, III. 306.
 APOSTROPHE, III. 306; XVIII. 685; XIX. 133.
 Aposura, section of insects, IX. 214.
 APOTACTIÆ, III. 306.
 APOTEICHISMUS, III. 306.
 APOTHECA, III. 307.
 APOTHECARY, III. 306—Apothecaries' Company, 307; XIV. 465—table of apothecaries' weight, III. 584; XXI. 808—police of apothecaries' shops, XIV. 441—grains, in different countries, XXI. 807.
 Apothecium, in lichens, V. 146.
 APOTHEOSIS, III. 307.
 APOTHESES, III. 307.
 APOTOME, III. 307.
 APOTROPÆ, III. 307.
 Appa Sahib, XV. 771.
 APPALACHIAN MOUNTAINS, III. 307; XXI. 420, 421—coal-field of, 420. See Alleghany Mountains.—branch of American aborigines, II. 677.
 APPALACHICOLA, river in North America, III. 307.
 APPANAGE, III. 307. See Apanage.

APP—APU

- APPARATUS, III. 307.
 APPAREILLE, in fortification, III. 307.
 APPARENT HEIR, in law, III. 307.
 APPARITION, CIRCLE OF, in astronomy, III. 307.
 APPARITIONS, III. 308—Shakspeare's ghosts, XX. 88, and *n.* 1.
 APPARITOR, III. 322.
 APPEAL, in law, III. 322; VIII. 787, 788—to God, XIII. 262—in murder, 22. See Parliament.
 APPELLANT, III. 323.
 APPELLATION, III. 323.
 APPELLATIVE NAMES, III. 324—of God, XXI. 188.
 Appendicularia, genus of mollusks, XV. 336.
 APPENDINI (Francesco Maria), III. 324.
 APPENZEL, Swiss town and canton, III. 324; XX. 882.
 Appert (M.), his mode of preserving food, IX. 767.
 APPETITE, III. 324; XIV. 579.
 APPIA VIA, III. 324; XIX. 228.
 APPIAN, Roman historian, III. 325.
 APPIANI, two modern Italian painters, III. 325.
 APPIUS CLAUDIUS, III. 325; XIX. 300—his aqueduct, III. 333.
 APPLAUSE, III. 325.
 APPLE, III. 325; V. 191—section of the fruit, 138—chemical composition of, IX. 759—culture and varieties of, XI. 715—specific gravity of the wood of the apple-tree, XII. 89.—egg, V. 201.—(bitter), V. 193.
 APFLEBY, in Westmoreland, III. 325; XXI. 843.
 Applegath's printing machines, XVIII. 559, 560.
 APPLICATION, in geometry, III. 325.
 Appold's centrifugal pump, XII. 76, 180.
 APPRAISER, III. 325.
 APPREHENSION, in logic, III. 325; XIII. 568; XIX. 114, 115.
 APPRENTICE, III. 325; XIV. 346—sea-apprentices, 349.
 APPRENTICESHIP, III. 326—of slaves, XX. 325.
 APPROACHES, in fortification, III. 327. See Fortification.
 Approbation, love of, XVII. 562, 673.
 Approvers, in law, XVIII. 192.
 APPROXIMATION, III. 327.
 Appuldurcombe Down, Isle of Wight, XXI. 861.
 APPULSE, in astronomy, III. 327; IV. 46, 48.
 Apricot, culture and varieties of, XI. 711.
 APRIES, king of Egypt, III. 327; VIII. 465.
 APRIL, III. 327—gardening calendar for, XI. 758.
 Aprion, genus of fishes, XII. 276, 323.
 A PRIORI, a philosophical term, III. 327.
 APRON, in ship-building, III. 327—in gunnery, III. 327.
 Apsilus, genus of fishes, XII. 276.
 APSIS, III. 327.—in astronomy, III. 327—motion of the Apsides, I. 812; IV. 102; chango of the, I. 811.
 Apsius, genus of fossil fishes, XII. 346.
 Apsley House, XXI. 829, 940.
 Art, in France, III. 328.
 Aptenodytes, genus of birds, XVI. 811.
 Apteral, in architecture, III. 507.
 Apterichthys, genus of fishes, XII. 232.
 APTERYX, a genus of wingless birds, III. 328; XVI. 796; XVII. 155.
 Apthalmichthys, genus of fishes, XII. 232.
 APTHANE, III. 328.
 Aptinus, genus of insects, IX. 81.
 Aptornis, extinct genus of birds, XVII. 156.
 APULEIUS (Lucius), III. 328; II. 608.
 APULIA, a subdivision of ancient Italy, III. 328—volcanic formation of, XII. 637.
 Apulian system of agriculture, XX. 247.
 APURE, river, III. 328; XVI. 716.—province, XXI. 537.

APU—ARA

APURIMAC, river, III. 328; XVII. 604.
 APUSCIDAMUS, African lake, III. 328.
 APYCNI (Soni), III. 328.
 APYROUS, III. 328.
 AQUA, III. 328—fortis—secunda—Tofana, history of, ib.
 — marina, or aquamarine, III. 328; XV. 88.
 — regia, III. 328; VI. 483—specific gravity of, XII. 89.
 Aquæ Sextiæ, defeat of the Teutones at, XIX. 319.
 AQUAMBOE, African kingdom, III. 331.
 AQUAPENDENTE, III. 331. See Fabricius (Jerome).
 AQUAPIM, African kingdom, III. 331.
 AQUARIANS, III. 331.
 AQUARI, III. 331.
 Aquarium, invention of, XV. 328.
 AQUARIUS, zodiacal sign, III. 331; IV. 80.
 Aquatic plants, V. 221.
 AQUATINTA ENGRAVING, III. 331; VIII. 799, 801.
 AQUEDUCT, III. 333—Roman, XIX. 359—at Delhi, VII. 706—at Marseille, XIV. 317—ruins of, at Jericho, XII. 727—at Lisbon, XIII. 506—at Segovia, XX. 33.
 Aqueous humour of the eye, in man, III. 44; XVII. 678—in different animals, III. 95.
 — rocks, XV. 139—classification of, 155—petrology, or the character, structure, &c., of, 156—elevation of, 166—as building stones, XX. 711.
 Aquifoliaceæ, nat. order of plants, V. 199.
 AQUILA, a constellation, III. 339; IV. 80—Neapolitan city, III. 339—Roman standard, ib.
 — a native of Pontus, III. 339—his Greek version of the Old Testament, IV. 700; XIX. 840.
 — genus of birds, XVI. 742.
 Aquilariaceæ, nat. order of plants, V. 205.
 AQUILEIA, ancient Italian city, III. 339.
 AQUINAS (St Thomas), III. 339—doctrines of, I. 325—his comprehensive views, 326—extensive influence of his ethical system, 328—champion of Augustinianism, 325, 434—on charity, 436—on the power of the Pope, 436—on comedy, VIII. 148.
 AQUINO, Italian town, III. 340.
 — (CARLO D'), Italian writer, III. 340.
 AQUITANIA, division of Gaul, III. 340.
 ARABESQUE, III. 340; XI. 68; XVII. 59.
 ARABIA, III. 341, 734—climate of, 736—7—coffee, VII. 53—modern names of months, VI. 674—expeditions of Mohammed Alee and Ibraheem Pasha against the Wahabees of, VIII. 493, 494—locusts in, IX. 159—horses of, XI. 634; III. 345, 740—languages of, XIII. 200, 209—mythology, XV. 764—coins of, XVI. 380—mountains of, XVII. 597—deserts, 614—Arabian botanical region, V. 228; XVII. 628—export from Europe of the precious metals to, XVIII. 467—weights and measures of, XXI. 809—polygamy, XVIII. 266.
 Arabians, or Saracens, of the middle ages—the first discoverers in Northern Africa, II. 209—invention of algebra claimed by them, 483—their conquest of Algiers, 567—fond of astrology, 598—science cultivated by them, 754—55—anatomy little advanced by them, 755—national character, VIII. 430, n. 4—their dials, VII. 775—their architecture, III. 400; VIII. 499, n. 2—conquests, III. 743—their astronomy, 794—refined species of numeration, II. 7—introduction of Arabian numerals into Europe, III. 580—medicine under, XIV. 456, 457; its decline, 456, 457—conquest of Egypt by, VIII. 474—their attention to geography, X. 468; to geometry and other sciences, 503; to mathematics, XXI. 338—appear to have been acquainted with gunpowder, XI. 150—their art, XVII. 60—their knowledge of surgery, XX. 814. See Saracens.
 Arabic alphabet, II. 616—translations of Aristotle, III. 537—versions of the

ARA—ARA

Scriptures, IV. 700; XIX. 839—learning, XVII. 521—language, 534; XIX. 833—Mr Carlyle's translation of Arabic works, VI. 242—Casirer's catalogue of Arabic MSS., 310—Edrisis' Arabic work on geography, VIII. 411—Pocock's Arabic versions, XVIII. 88.
 Arabic, gum, V. 73, 190; XI. 93—spec. grav. of, XII. 89—imports of, into the United Kingdom, VIII. 734; into Britain, XI. 93—of Kordofan, XIII. 131.
 ARABICI, sect, III. 366.
 Arabine, V. 73; IX. 756; XI. 93.
 ARABISM, III. 366.
 ARABIST, III. 366.
 Arabs (Modern), III. 347—in Africa, II. 220—Algiers, 566—Syria, XX. 907—their invasion of, 911—their ballad literature, IV. 396—slave-trade carried on by, XX. 320. See Bedouins.
 ARACAN, III. 366. See Arracan.
 Aracana, genus of fishes, XII. 314.
 Aracaris, birds, XVI. 779.
 Araceæ, nat. order of plants, V. 214.
 ARACHIS, a genus of plants, III. 366.
 ARACHNE, III. 366.
 ARACHNIDES, III. 367—poisonous species, XIV. 441—fossil, XVII. 100, 103.
 ARACHNOIDES, in anatomy, III. 390, 57.
 Arachnothera, genus of birds, XVI. 769.
 ARACK, III. 390. See Arrack.
 Aradus, genus of insects, IX. 163.
 ARÆOMETER, III. 390—barometrical, XII. 87.
 Aræopagus. See Areopagus.
 ARÆOSTYLE, in architecture, III. 392, 507.
 ARÆOSYSTYLE, in architecture, III. 392, 507.
 ARÆOTICS, in medicine, III. 392.
 ARÆOXENE, mineral, XV. 106.
 ARAFAH, III. 392.
 ARAFAT, mountain near Mecca, III. 392; XIV. 379.
 Arago (Dominique François Jean), I. 907, 908—his geodetical observations, ib.—his optical labours of most importance, ib.—his discovery of the colours of crystallized bodies in polarized light, ib.—on the phenomena of depolarization, ib.—his experiments on rays oppositely polarized, 909—his polariscope, ib.—on Newton's rings, and the rotatory action of quartz, 910—on the retardations of light in dense media, ib.—his rotation magnetism explained, 980—on electro-magnetism, 911, 974, 745, 746; VIII. 532—on meteorology, I. 911—character of his Eloges, ib.—article on polarization of light, in this work, written by, ib. n. 2—his death, I. 911—on chromatics, VI. 643 *et seq.*—his share in measuring the French arc of meridian, I. 837—on Sir Wm. Herschel's discoveries, 846 n. 2—on magnetism, XIV. 10, 15, 29, 30, 31, 53, 55—on micrometers, 744, 745—his micrometer, 752—on optics, XVI. 537, 538, 544, 595, 605 *et seq.*, 752—pension obtained for the discoverers of photography by, XVII. 545—experiments on the force of steam, XX. 558—on the power of electrical currents in developing magnetism in iron and steel, XXI. 638, 640—his acquaintanceship with Dr Thos. Young, 964.
 ARAGON, in Spain, III. 393; XX. 493—Moorish kingdom of, 462—Christian kingdom, 467—canal of, 491—vintage of, XXI. 884.
 — dynasty of, in the two Sicilies, XX. 259, 263.
 ARAGONA, town of Sicily, III. 394.
 ARAGONITE, mineral, III. 394. See Arragonite.
 ARAHAL, town of Spain, III. 394.
 ARAI, sea of, III. 394, 733; XVII. 591, 606; XIX. 549.
 ARALIACEÆ, nat. order of plants, III. 394; V. 195.
 ARAM, III. 394; XX. 901.
 — descendants of, VIII. 46.
 — (Eugene), scene of the murder committed by, XIII. 107.

ARA—ARC

Aramean race of man, II. 775.
 ARAMAIC LANGUAGE, III. 394; XIII. 209; XIX. 833.
 Aramus, genus of birds, XVI. 798.
 ARANDA DE DUERO, Spanish town, III. 394.
 Aranea, genus of Arachnides, III. 379.
 Araneides, family of spiders, III. 373.
 ARANGOES, kind of beads, III. 394.
 ARANJUEZ, Spanish town, III. 394.
 Aranzi (J. C.), his anatomical discoveries, II. 759.
 Arapaima, genus of fishes, XII. 250, 249.
 Araponga, birds, XVI. 750.
 Araqua-Guazi, river, XVII. 709.
 ARARAT, mountain, III. 394.
 ARAS, ancient Araxes, river, III. 395.
 Aratinga, genus of birds, XVI. 780.
 ARATUS, of Sicyon, III. 395.
 — of Soli, poet, III. 395.
 Aran, Swiss town, XX. 882.
 ARAUCANIA, in South America, III. 395.
 Araucanians, II. 690; VI. 552, 553; IX. 349—their wars with the Spaniards, III. 395—complexion of, VI. 548.
 ARAUCARIA, genus of coniferous plants, III. 396; XVII. 761.
 Arauco, in Chile, VI. 547.
 ARAUSIO, III. 396.
 ARAVULLI, mountains, III. 396.
 ARBACES, king of Media, III. 396, 778; IV. 594; XVII. 434.
 Arbacia, fossil echinoidea, XVII. 100.
 ARBALEST, or Cross-bow, III. 396; V. 251.
 ARBE, island and city of Illyria, III. 396.
 ARBELA, now Arbil, in Asiatic Turkey, III. 396—battle of, XIII. 768; XVII. 434.
 ARBERG, a Swiss town, III. 396.
 Arbetio, VII. 304.
 Arbiter, in law, III. 396.
 ARBITRARY, III. 396—punishment in law, ib.
 ARBITRATION, III. 396—of exchange, IX. 444.
 Arblay (Madame). See Burney (Frances).
 Arbogastes, VII. 310, 311.
 ARBOIS, French town, III. 397.
 ARBON, Swiss town, III. 397.
 ARBOR, in mechanics, III. 397.
 — vitæ, XVII. 761.
 Arboriculture. See Planting.
 ARBROATH, III. 397; IX. 783—abbey of, ib.—paving-stone, V. 45.
 ARBURG, Swiss city, III. 398.
 Arburyhill, station in the Trigonometrical Survey, XXI. 331.
 ARBUTHNOT (Alexander), III. 398.
 — (JOHN, M.D.), III. 398—his share in the work entitled Martinus Scriblerus, I. 242 n.; XX. 873—estimate of his talents, I. 285—his errors respecting the value of ancient coins, XV. 433—his epitaph on Col. Chartres, IX. 283—Swift's intimacy with, XX. 873.
 ARBUTUS, genus of plants, III. 399; V. 198; XI. 748; XVII. 761; XX. 330—*A. ura uvi*, used for dyeing black, VIII. 305—*A. unedo*, indigenous to Kerry, XV. 687.
 ARC, JOAN of, III. 399; XII. 787; X. 23.
 — trisection of an, III. 145.
 — of meridian, measurement of, IX. 548 *et seq.*—French arc, I. 836—English, 837—Indian, 853; IX. 552, 557 n., 558 n.—Russian, I. 854—table of arcs of meridian, IX. 562.
 — of parallel, I. 854; IX. 559, 560, 564.
 Area, genus of mollusks, XV. 347, 349; XVII. 106.
 Arcadæ, family of mollusks, XV. 349—fossil, XVII. 106.
 ARCADE, in architecture, III. 400, 488, 507.
 Areadi, Academy of, II. 70.
 ARCADIA, III. 400; XI. 12, 19—monarchy of, XV. 412—coins of, XVI. 372.
 Arcadian alphabet, II. Pl. XIX.
 Arcadius, Roman emperor, VII. 311.
 Arcanite, mineral, XV. 99.
 ARCESILAUS, III. 400.
 ARCH, III. 400, 507—principle of, known to the Greeks, 440; XX. 710; but its properties unknown, III. 443—invention

ARC—ARC

of the, ib.—first extensively used by the Romans, ib.—Gothic, speculation as to its invention, 446—Saxon, 480—Anglo-Norman, ib.—pointed, ib. *et seq.*—Lancet, 481—Attwood on the, IV. 234—equilibrium of arches, V. 351—brickwork arches, 733—early Egyptian arches, VIII. 502—centres for, VI. 373 *et seq.*—Assyrians well acquainted with the principle of, XVI. 277—iron arches, XII. 587—in the construction of roofs, 589—oblique, XX. 314—arch of a circle, X. 513—theory of stone arches, XX. 544—principles of, 719—how to describe, 725—to find the joints of, 728—to find the arch-stones, ib.—different kinds of, in mediæval architecture, 733—arch-joints, 734—relieving arches, ib. See Aqueduct, Bridge, Centre, Skew-bridge.
 ARCH, TRIUMPHAL, III. 418—Roman, 469, 477—arch of Titus, 487.
 — an English prefix, III. 419.
 Archæocidaris, fossil echinoidea, XVII. 99.
 ARCHÆOLOGY, III. 419.
 Archæoniscus, fossils, XVII. 102.
 Archæus, genus of fossil fishes, XII. 345.
 Archagathus, his African expedition, VI. 285.
 — physician, XIV. 453; XX. 812.
 ARCHAISM, III. 422.
 ARCHANGEL, III. 422.
 — in Russia, III. 422; XIX. 521—blockade of the town of, in 1854, 507—climate, 519.
 ARCHBISHOP, III. 423; IX. 281—succession of archbishops of Canterbury, VI. 197—English archbishops, VIII. 743—French, X. 243, 267.
 ARCHCHAMBERLAIN, III. 423.
 ARCHCHANCELLOR, III. 423.
 ARCHDEACON, III. 423—court, 424—English archdeacons, VIII. 743.
 ARCHDUKE, III. 424.
 Archegonium, in botany, V. 156.
 Archegosaurus, fossil reptile, XVII. 133.
 ARCHELAUS, Greek philosopher, III. 424.
 — king of Macedonia, III. 424; XIII. 761.
 — king of Judea, III. 424; XII. 772.
 — Athenian general, III. 424; IV. 172—his engagement with Sylla, III. 685.
 — Greek sculptor, III. 424.
 — king of Cappadocia, VI. 223.
 ARCHENA, Spanish town, III. 424.
 ARCHENHOLZ (Johann Wilhelm Von), III. 424.
 Archer (Scott), his improvements in photography, XVII. 546, 547.
 — (Henry), his machine for perforating postage stamps, XVIII. 415.
 Archers, Royal Company of, in Scotland, III. 428—body of, established by Henry VII. as yeomen of the guard, VIII. 694.
 ARCHERY, III. 424; XI. 170; XX. 209—practised at Kilwinning, XIII. 88. See Bow.
 ARCHES COURT, III. 429; VII. 468.
 ARCHETYPE, III. 429.
 ARCHEUS, III. 429.
 Archiacia, fossil echinoidea, XVII. 100.
 ARCHIALCATHUS, III. 429. See Acolyte.
 ARCHILATER, III. 429; XIV. 422.
 Archidamus, IV. 204.
 ARCHIDAPIFER, III. 429.
 ARCHIDONA, Spanish city, III. 429.
 Archiepiscopal orders of knighthood, XIII. 123.
 ARCHIGALLUS, III. 429.
 Archigenes, Roman surgeon, XX. 813.
 ARCHIGERONTES, III. 429.
 ARCHIL, lichen for dyeing purple, III. 429; V. 217; VIII. 285; XIII. 515—discovery of, VIII. 273.
 ARCHILOCHIAN verse, III. 429.
 ARCHILOCHUS, Greek poet, III. 429.
 ARCHIMAGUS, III. 429.
 ARCHIMANDRITE, III. 429.
 ARCHIMEDES, III. 429; X. 500—his contributions to mathematics, I. 551, 553—discoveries in physics, 566—the first who applied mathematics to natural philosophy, 567—his discoveries in hy-

ARC—ARD

drostatics, 596; XII. 69—extended notation proposed by, III. 576—his planetarium, 790—his burning glasses, VI. 3, 7; I. 622—on conic sections, VII. 249, 250—his screw-engine, XII. 69, 181—his proposition on floating bodies, 83— anecdote of, 85; XX. 130—Moor's edition of his *Arenarius*, XV. 526—on the quadrature of the circle, XX. 521, 522—his machines for defending Syracuse, 900—death of, ib.

ARCHIMEDES-SCREW PROPELLER, III. 430. See Steam Navigation.

Archimediopora, fossil animals, XVII. 98, 96.

ARCHIMIDUS, III. 430.

ARCHINUS of Coele, III. 431.

ARCHIPELAGO, III. 431—the Dangerous Archipelago, XVIII. 282.

ARCHISTYNAGOGUS, III. 431.

ARCHITECT, III. 431—skilful architects of the middle ages, 402.

ARCHITECTURE, III. 432—French Academy of, II. 69—Mexican, 683—Peruvian, 685, 688—Chinese, 688; VI. 582—Egyptian, III. 457; VIII. 442—Nubian, XVI. 349—Hindu, III. 459; XI. 477—Grecian, III. 440, 460—Roman, 443, 469—Italian, 449, 477—Gothic or Pointed, 445, 479—principles of architectural composition, 485—glossary of terms, 507—Assyrian, III. 499 *et seq.*; XVI. 276—of Pompeii, XVIII. 288—Spain, XX. 494—America, XXI. 424—Alison on the beauty of Grecian, IV. 549—Coulomb's statical problems relating to, VII. 461—improved by the Crusades, 534—its position among the arts, XIV. 337—Lombard style, XIII. 643—garden architecture, XI. 754—in the reign of Queen Elizabeth, &c., XXI. 934. See Arch, Building, Carpentry, Chimney, Dome, Free Masonry, Roof, Stone Masonry, &c.

— (Naval). See Ship-building.

Architrave, III. 507—Doric, 464, 476—Ionic, 465, 475—Corinthian, 467, 474—Caryatic, 467—in joinery, V. 752; XII. 812.

ARCHIVE, or Archives, III. 517.

ARCHIVIST, III. 517.

Archivolt, in architecture, III. 507.

ARCLUTE, or Arciluto, III. 517.

ARCHON, III. 517; IV. 193, 213—in Gnosticism, X. 687.

ARCHPRIEST, or archpresbyter, III. 518.

ARCHYTAS of Tarentum, III. 518, 552; X. 498; XVII. 787—his artificial flying dove, II. 166; IV. 320.

Arcis, battle of, X. 168.

ARCIS-SUR-AUBE, in France, III. 518.

ARCO, town in the Tyrol, III. 518.

ARCOLE, village in Austrian Italy, III. 518—battle of, ib.; X. 103; XV. 789.

ARÇON (J. C. E. Le Michaud d'), French engineer, III. 518—his floating batteries, X. 618.

Arcopagus, genus of insects, IX. 153.

ARCOS DE LA FRONTERA, Spanish town, III. 519.

ARCOT, city of Hindustan, III. 519.

— nabob of, payment of his debts, V. 514—Burke's speech on that subject, 777.

ARCTIC, III. 519—circle, ib.—pole, X. 481—ocean, XVII. 576; depth of, XVII. 575.

— REGIONS, III. 519. See Polar Regions.

— region of vegetation, V. 231.

Arctomys, genus of mammalia, XIV. 179.

ARCTURUS, a fixed star, III. 519.

Arcuata, family of crustacea, VII. 541.

Arcueil, aqueduct of, III. 336.

ARCY (Grotte d'), a stalactitic cavern, III. 519.

— (PATRICK D'), III. 519—on over-shot wheels, XII. 168.

Ard (Loch), trout of, III. 158, n.

ARDEA, or Ardua, ancient city of Latium, III. 519.

— genus of birds, III. 519; XVI. 798.

ARDEBEL, or Ardebeel, Persian town, III. 519.

ARD—ARG

ARDECHE, in France, III. 519.

ARDEE, town in Ireland, III. 519.

ARDELAN, province of Persia, III. 520.

ARDELL (James Mac), engraver, III. 520.

ARDEN, III. 520.

ARDENNE, forest of, III. 520; IV. 610.

ARDENNES, III. 520.

Ardent spirits. See Alcohol, Distillation, Brandy, &c.

Ardern (John of), surgeon, XX. 817.

ARDES, French town, III. 520.

ARDFERT, Irish town, III. 520; XIII. 72.

ARDGLASS, Irish seaport, 520; VIII. 122.

ARDISHEER, III. 520. See Persia.

Ardmore, in Waterford, XXI. 769—pillar-tower at, 771.

Ardnurchur, castle of, XXI. 841.

ARDOCH, in Perthshire, III. 520.

ARDOYE, town in Belgium, III. 520.

ARDRAH, in Africa, III. 520.

ARDRES, French town, III. 520.

ARDROSSAN, in Ayrshire, III. 520—harbour of, IV. 333—railway, ib.—canal, XIII. 176.

ARDSICH, in Wallachia, III. 520.

ARE, French superficial measure, III. 520; X. 284.

AREA, III. 520—in architecture, ib.—in geometry, 521; X. 520—areas of the conic sections, VII. 289. See Mensuration.

AREBO, African town, III. 521.

ARECA, a genus of palms, III. 521; V. 214; VI. 394—fruit used in making betel, IV. 685.

Areiopagus. See Areopagus.

AREMBERG, Prussian town, III. 521.

ARENA, III. 521.

Arenaceous plants, V. 221.

ARENARIA, genus of birds, III. 521; XVI. 804—of plants, III. 521.

ARENARIUS, III. 521.

ARENARIUM, III. 521.

ARENDAL, Norwegian town, III. 521.

ARENDT (Martin Frederic), III. 521.

ARENG, a genus of palms, III. 521.

Arenicola, genus of annelids, XI. 296.

Arenicoll, section of insects, IX. 120.

Arenoid barometer, IV. 459.

ARENSBERG, city of Westphalia, III. 521.

ARENSBURG, seaport of European Russia, III. 521.

Areoda, genus of insects, IX. 125.

AREOLA, III. 521.

Areometer, barometrical, XII. 87.

AREOPAGUS, III. 521; IV. 169, 215; XI. 19.

AREQUIPA, in Peru, III. 521; XVII. 469, 474.

— volcanic mountain, IV. 822—height of, XVII. 645.

ARES, Greek deity, III. 522.

ARETEUS of Cappadocia, III. 522; II. 688; XX. 812, 813—on insanity, XIV. 527.

ARETALOGI, III. 522.

ARETHUSA, III. 522; XI. 361.

ARETINO (Guido), musician, III. 522.

— (LEONARDO and FRANCESCO), III. 523.

— (PIETRO), III. 523— anecdote of Tintoretto and, XXI. 284.

AREZZO, Tuscan city, III. 523.

— prefettura of, XXI. 395.

ARFE (Henrique and Juan de), III. 524.

Arfvedsonite, mineral, XV. 81.

Argali, in zoology, XIV. 212, 213.

ARGAND (Aimé), III. 524.

— gas-burners, X. 425—their orifices, 426.

— lamp, XIII. 170—used in reflectors, 469.

Argas, genus of arachnides, III. 388.

ARGAUM, in Hyderabad, III. 524.

ARGEI, III. 524.

Argelander (Prof.), on the solar motion, IV. 87; I. 846—his catalogue of stars, IV. 95—in the magnitude of the stars, ib.

ARGELES, in France, III. 524.

ARGENSOLA (Bartolome Leonard de), III. 524.

ARGENT, III. 524—in heraldry, XI. 324.

ARGENTAC, French town, III. 524.

ARG—ARI

ARGENTAN, in France, III. 524.

Argentario, mountain, XXI. 393.

ARGENTARIUS, III. 524.

ARGENTEUIL, French town, III. 524.

Argenteus, Roman coin, XVI. 383.

ARGENTIERE, island, III. 524.

Argentina, genus of fishes, XII. 245.

ARGENTINE CONFEDERATION, III. 524. See La Plata.

ARGENTINUS, Roman deity, III. 524.

Argentite, XV. 117.

ARGENTUM ALBUM, III. 524.

— DEI, III. 524.

Arges, genus of fishes, XII. 262, 260.

Argillaceous rocks, XVII. 620.

ARGO, III. 524.

ARGOBAST (Louis François Antoine), III. 524.

Argobastes, VII. 311.

ARGOL, or Argal, III. 524.

Argolis, in Greece, XI. 12, 19—coins of, XVI. 372.

Argonauta, genus of mollusks, XV. 401, 395.

ARGONAUTS, III. 524.

— OF ST NICHOLAS, military order, III. 525.

— Academy of, II. 62.

ARGONNE, in France, III. 525.

ARGOS, III. 525; XI. 12—monarchy of, XV. 412.

— AMPHILOCHICUM, III. 525.

ARGOSTOLI, town in Cephalonia, III. 525; XII. 453.

Argovia, a Swiss canton, II. 3. See Argau.

ARGUIN, African island, III. 525.

Argumentation, process of, XIX. 119, 120.

Arguments, in rhetoric—classification of, XIX. 121—application of, 125—from condition, 122—symptom, 123—resemblance, 124.

ARGUMENTUM AD HOMINEM, III. 525.

ARGUN, river, III. 525.

ARGUNSKOI, town in Siberia, III. 525.

ARGUS, III. 525—shell, 525.

— genus of birds, XVI. 790.

ARGUTÆ, III. 525.

Argyle (earls, marquises, and dukes of), III. 527. See Campbell.

— in Australia, IV. 278, 282.

ARGYLESIRE, III. 525—fisheries of, IX. 635, 636—vitrified forts of, 792—agricultural statistics, XIX. 796, 797, 798—population, 799.

Argynnis, genus of insects, IX. 207.

ARGYRASPIDES, III. 527.

Argyreiosus, genus of fishes, XII. 297.

ARGYRO-CASTRO, town in Albania, III. 527.

Argyroneta, genus of arachnides, III. 379.

Argyropelecus, genus of fishes, XII. 248.

ARGYROPULUS (Joannes), III. 527.

ARIADNÆA, Greek festivals, III. 527.

ARIADNE, daughter of Minos, III. 527.

Arian languages, XVII. 529—branches of, 530—philology of, 531—extensions of, 533.

ARIANO, Neapolitan city, III. 528.

ARIANS, III. 528, 608; VIII. 473; XII. 764; XXI. 208—opposed by St Ambrose, II. 663—Milton's adoption of their views, XV. 34—Whitaker's work on Arianism, XXI. 851. See Arius.

Ariarthes, VI. 222.

ARIAS-MONTANUS, Spanish divine, III. 528.

ARICA, town and district in Peru, III. 528.

Aricia, genus of annelids, XI. 299.

ARICINA, surname of Diana, III. 528.

Aridæus, XIII. 773.

ARIEGE, in France, III. 528.

ARIENZO, city of Naples, III. 528.

ARIES, zodiacal sign, III. 528.

— See Battering-ram.

Arietes, Ammonites, XVII. 113.

Aril, or Arillus, in botany, V. 140.

Arillode, in botany, V. 140.

ARIMANES, III. 528.

ARIMASPI, III. 528.

Ariminum, XIX. 173.

Ariobarzanes, VI. 222; XVIII. 292.

Ariodes, genus of fishes, XII. 262.

ARI—ARI

ARIOI, III. 528.

ARION, Lesbian poet, III. 528—fabulous horse, 529.

— genus of mollusks, XV. 374.

ARIOSTO (Lodovico), III. 529—Galileo's admiration of, X. 381—his poetry, XVIII. 95, 110—Hoole's translation of his *Orlando Furioso*, XI. 622.

Ariovistus, X. 574.

ARISTÆUS, son of Apollo, III. 530.

— geometer, X. 499.

Aristagoras, his map, X. 466.

— the Milesian, IV. 198.

ARISTANDER, soothsayer, III. 530.

ARISTARCHUS, of Samos, III. 530—his astronomy, 790.

— of Samothrace, III. 530.

Aristeas's account of the Pentateuch, IV. 699.

ARISTIDES the Just, III. 530; IV. 199.

— (P. ÆLIUS), Greek rhetorician, III. 531.

— (QUINTILIANUS), III. 531.

— Greek painter, III. 531; XVII. 54, 57.

Aristillus, astronomer, I. 598; III. 790; X. 465.

ARISTIPPUS, founder of the Cyrenaic sect of philosophers, III. 531, 551, note 9; I. 316; VII. 610; XVII. 789.

ARISTO of Chios, Stoic philosopher, III. 532.

ARISTOBULUS of Cassandria, III. 532.

— Alexandrian Jew, III. 532—his notice of the Septuagint, IV. 698.

— XII. 770; XVII. 194.

ARISTOCRACY, III. 532; X. 734—in Attica, IV. 193.

Aristodicus of Cyme, XX. 391.

ARISTOGITON, III. 532; XI. 229; III. 532; IV. 197.

ARISTOLOCHIEÆ, or Aristolochiaceæ, nat. order of plants, III. 532; V. 205.

Aristomenes, XX. 499.

Aristonicus, XVII. 411.

ARISTOPHANES, III. 532—his comedies, VIII. 139—his enmity to Euripides, IX. 378—instructed the people under the mask of folly, XVII. 795—his comedy of *The Clouds*, XX. 383—his ridicule and misrepresentation of Socrates, ib. 384, 385.

— of Byzantium, III. 532.

ARISTOTLE, III. 533—his writings, 536, 570—character of his philosophy, 538—causes which operated in undermining the authority of, I. 16—by whom his authority was endangered, 25—on rhetoric, 54; III. 556; XIX. 119 *et seq.*—his comparison of the mind to a sheet of unwritten paper, I. 330—resemblance of Hume's principles of association to the views of, 443—his definition of motion, 566; of light, 621; and heat, 756—his disbelief in a future state, 462—his physical tenets, III. 541; IV. 448—his system of logic may be derived from India, V. 271—high estimation of his works in the middle ages, VII. 535—on dew, 765—on the dramatic unities, VIII. 152—on speculative philosophy, XIV. 551—on dreams, VIII. 176—his supposed opinion on *universals*, XVI. 284—Reid's account of his logic, XIX. 2—founder of comparative anatomy, II. 750—extent of his anatomical knowledge, ib.—his influence on the advancement of medicine, XIV. 452—philology advanced by, XVII. 518—refutation of his logic by Ramus, XVIII. 805—his History of animals, II. 750; III. 548, 549; XII. 204; XIV. 122—on the soul, III. 548—on mathematics, 541—on metaphysics, 541; XIV. 553—on perception, III. 549—his astronomy, 545, 789—his use of the term Reminiscence, XIV. 576 and n. 10—his Analytics, III. 553—on fishes, XII. 259, 274 *et seq.*—on birds, XVI. 725—his Dialectic, III. 550—his Poetics, 559—his Ethics, 560—his Politics, 566—design of his philosophy, 570—style of his writings, ib.—his obscurity, 571—

ARI—ARM

his method of discussion, *ib.*—his originality, *ib.*—how far indebted to Plato, *ib.*—his esoteric and exoteric works, IX. 332—on fallacies, 476—on speech, XIII. 185—his library, 383—on light, 449—on optics, XVI. 521—on the distinction between *making* and *doing*, XV. 535—on moral philosophy, 536, 538, 541, 558, 560—his ethical works, 539—on the air, XVIII. 24—on man as a member of society, XV. 569—on falconry, XX. 209—on the silk-worm, 286—Simplicius' commentaries on, 298—Socrates a precursor of, 402—influence of his doctrines on medicine, 811—says little about the tides, XXI. 250—his opinions on natural theology, 181.

ARISTOTLE'S PHILOSOPHY, III. 536—Luther's contempt for, I. 16—Melancthon's approbation of, *ib.* See Aristotle, Ethics, and Ethical Philosophy.

ARISTOXENUS, III. 572.

ARITHMETIC, III. 572—history of, *ib.*—early systems of notation, I. 702—discovery of the denary system generally referred to India, 703—advantages and gradual extension of this system, *ib.*—decimal fractions first introduced by Stevinus, *ib.*—notation of decimals brought to its utmost simplicity by Napier, *ib.*—advantages and disadvantages of the duodenary scale, *ib.*—perfect, prime, and composite numbers, 704—magic squares, *ib.*—continued fractions much cultivated during the eighteenth century, 705; and brought to perfection by Euler, *ib.*—applications of the theory by him, *ib.*—applied to the solution of numerical equations by Lagrange, 706—tables of the powers and products of numbers by Hervart, *ib.*—of the Greeks, Romans, and Arabians, II. 5, 6, 7—abundant number in, 54—proportion in, 500—of sines, 547—alligation or solution of questions relating to the mixture of ingredients, 592—binary, IV. 724; I. 703—Chinese knowledge of, VI. 585—Druidical knowledge of, VIII. 187—necessary truths of, XIV. 597, 598—one of the branches of pure mathematics, 353—Napier's rods, XV. 777—Pestalozzi's mode of teaching, XVII. 479—Playfair on the arithmetic of impossible quantities, XVIII. 4—arithmetical board for the blind, IV. 777—arithmetical progression, XVIII. 639. See Number, Series, Addition, &c.

ARIUS, III. 607; IX. 404—his songs, XII. 189.

—genus of fishes, XII. 262.

ARK (Noah's), III. 608; VII. 713; XX. 117.

—of the Covenant, III. 608—in synagogues, XX. 898.

ARKANSAS, North American state, XII. 608; XXI. 419—debt of, 428—production of wine in, 888.

—river, III. 609; XVII. 605, 646.

Arkites, XX. 904.

ARKLOW, Irish town, III. 609.

ARKWRIGHT (Sir Richard), III. 609; VII. 442; V. 508—his spinning-frame, VII. 442; and other machines in cotton manufacture invented by, 443, 444; XIV. 251; XX. 510—importance of his inventions, V. 508.

ARLAND (Jacques Antoine), III. 612.

ARLES, in France, III. 612.

—earnest money, III. 524, 678.

Arm, human, muscles of, III. 38—motions of the, 40.

ARMADA (Spanish), III. 613; VIII. 712; XVII. 511; XX. 469—English force opposed to, 127—partly wrecked on the coast of Ireland, XII. 478—articles brought up by a diver from sunk ships of the, VIII. 60.

ARMADILLO, quadruped, III. 613; XIV. 191—fossil, XVII. 174—teeth of, XVI. 440, 441.

ARMAGEDDON, III. 613.

ARMAGH, III. 613—battle of, XII. 478—agricultural statistics of, 516, 517

ARM—ARM

ARMAGNAC, in France, III. 615.

—counts of, X. 22, 27.

Armament of fortresses, IX. 822—of ships of war, XVI. 93, 94, 98.

Arman (L.), his system of framing for ships, XX. 204.

Armançon, river, XXI. 954.

ARMATURA, III. 615.

Armature of loadstones, XIV. 20—of electrical machines, XXI. 647.

Arm-bone, III. 31.

Armed Neutrality of 1780, V. 494; VII. 742.

ARMENIA, III. 615; XXI. 377—conquered by Alp Arslan, II. 604—monarchy of, XV. 412—plateau of, III. 733; XVII. 597.

ARMENIAN LANGUAGE, III. 616; IX. 390; XIII. 216; XVII. 530—alphabet, II. 615; III. 617—works in that language, II. 615.

Armenian monks, on an island near Venice, XXI. 539.

—VERSION, III. 617; IV. 701; XIX. 839.

Armenians, in ethnology, IX. 346.

—in Jerusalem, XII. 747—in Calcutta, VI. 70—in Turkey, XXI. 378—era of the, VI. 673—months, *ib.*

Armenio-Gregorian church, in Russia, XIX. 528.

Armenius, X. 575.

Armens-grube, silver mine, XV. 236.

Arment, Egyptian village, VIII. 513.

ARMENTIERES, French town, III. 617.

ARMIGER, title, III. 617; IX. 333.

Armil, or ring, problem of, I. 949, *n.*

ARMILLARY SPHERE, III. 617; X. 486—supposed to have been invented by Eratosthenes, III. 790.

ARMINIANS, III. 617; IX. 394—Grotius one of, XI. 69—Dutch, 572—deny predestination, XVIII. 478—school of, XXI. 183—their hypothesis as to the effects of Adam's sin, 204—Arminian Baptists, IV. 427.

ARMINIUS, German chief, III. 617; X. 575.

—(JACOBUS), III. 617; XI. 572—on theology, XXI. 183, 204 *et seq.*

ARMISTICE, III. 618.

ARMLET, III. 618.

ARMORIC, III. 618.

ARMORY, III. 618.

ARMOUR, III. 618—Roman, 632—of the British Life-Guards, 665—of knights, VI. 616, 624—for divers, VIII. 57.

ARMS, military weapons, III. 618. See Army, War.

—in heraldry, III. 618—of states, XI. 322—royal arms of England, Scotland, and Ireland, 322, 323—marshalling, 339—coats of arms, why so called, XI. 321—of courtesy, VI. 610—places of arms, IX. 819.

—kings of, XI. 320.

—office of, for Ireland, XI. 321.

ARMSTRONG (John), M.D., physician and poet, III. 618—his sarcasm on Burman, V. 789—poetry of, XVIII. 124.

—(JOHN), M.D., physician, III. 618.

—(ROBERT), his furnace for the prevention of smoke, XX. 355.

—and Bowman's upright steam-boiler, XX. 617.

—gun, XXI. 727.

Armstrong's hydro-electric machine, VIII. 534, 605—Faraday's explanation of, 534.

ARMUYDEN, town in Walcheren, III. 618.

ARMY, III. 619—Achaean, 628—American, 661—Athenian, 625—Austrian, 644; IV. 317—of Baden, 652—Bavarian, *ib.*; IV. 519—Belgian, III. 653—Brazilian, 662; V. 297—British, III. 662; VIII. 750—of Bombay, V. 2—Carthaginian, III. 629—of Chile, VI. 547—Chinese, 583—Danish, III. 650; VII. 749—Dutch, III. 654; XI. 585—Egyptian, ancient and modern, III. 620; VIII. 515—French, III. 638; X. 270—of the Germanic confederation, III. 652—Greek, ancient and modern, 624, 661; XI. 20—of Hayti, III. 661

ARN—ARO

—Hanoverian, 652—Hungarian, XII. 16

—Indian, XI. 530—Japanese, XII. 692—Macedonian, III. 626—of the middle ages, 635—Norway, XVI. 329—Neapolitan, III. 655; XX. 253—of the Netherlands, III. 653; XI. 586—Nova Scotia, XVI. 345—Ottoman, III. 656—ancient Persian, 622; modern, XVII. 428—Prussian, III. 646; XVIII. 671—Portuguese, III. 643; XVIII. 396—Papal States, XVII. 245—Roman, III. 629—Russian, 647; XIX. 532—Sardinian, III. 655; XIX. 638—Saxon, III. 651—Spanish, 643; XX. 492—Spartan, III. 625—Swedish, 650; XX. 866—Swiss, III. 655; XX. 891—Theban, III. 628—Turkish, 658; XXI. 382—of United States, III. 661; XXI. 430—of Württemberg, III. 652; XXI. 939—proportions of artillery acting with, III. 689—continental armies in the eleventh century, VIII. 667 *n.*—discussions respecting a standing army, V. 535—Mr Windham's act for the improvement of, 599—Lord Howick's bill for religious emancipation in, 600—militia act, 605—principles for regulating an invading army, XIII. 287, 289—disregard of sanitary arrangements in the British, XIX. 606—promotion in, VII. 202—commissions in, *ib.*—rates of pay, *ib.*, 203—organization of, XXI. 715. See War.

ARNALL (William), III. 668.

ARNAUD de Meyrveilh, poet, III. 668.

—(DANIEL), troubadour, III. 668.

—DE ROUSIL (George), surgeon, III. 668.

—de Villa Nova, physician, III. 668.

—(Thomas Joseph), his visit to the ruins of Saba, III. 356.

—(St), marshal, French commander in the Crimea, XIX. 501, 504; XXI. 375.

ARNAULD (Antoine), III. 668; XVIII. 377—his book on true and false ideas, in opposition to the *Ideal theory*, I. 80—summary of his doctrines concerning ideas, *ib.* note 2—merits of his treatise on *The Art of Thinking*, *ib.*; the real author of that work, XVI. 253 *n.* 1— anecdotes of, I. 81—on Euclid's Elements, IX. 365.

ARNAT-LE-DUC, French town, III. 669.

ARNBERG (J. A.), his work on insects, IX. 15.

ARNDT (John), III. 669.

ARNE (Thomas Augustine), III. 669.

Arnee, in zoology, XIV. 216.

ARNHEIM, Dutch town, III. 670.

Arnheim land, in Northern Australia, IV. 270.

ARNICA, genus of plants, III. 670.

Arnim (Achim von), his novels, XIX. 292.

ARNISÆUS (Henningus), III. 670.

ARNO, Italian river, III. 670; XII. 637; XXI. 393.

ARNOBIUS, III. 670.

ARNOLD of Brescia, III. 670; XII. 645.

—(BENEDICT), American officer, III. 670.

—(SAMUEL), musician, III. 671.

—(STRUTTHAN VON WINCKELRIED), III. 671.

—(THOMAS), D.D., III. 671—on history, XI. 536—on Niebuhr's interpretation of the Agrarian laws, II. 246—on the laws of the twelve tables, XIX. 301—on the history of Rome, 303, 304.

Arnold's illustration of the nerves, II. 815, *n.* 1.

ARNOLDUS (Gothofredus), III. 673.

Arnolpho, III. 450.

Arnon, river, XVII. 188.

Arnott (Dr), his stove, XX. 353, 741.

Arnotto, order of plants, V. 183.

Arnsberg, in Westphalia, XXI. 844.

ARNSTADT, in Germany, III. 673.

ARNULPH, bishop of Rochester, III. 673.

ARNWAY (John), D.D., III. 673.

AROER, four towns in Scripture so named, III. 673.

Aroëris, Egyptian deity, VIII. 438.

AROIDEÆ, order of plants, III. 673. See Araceæ.

ARO—ARS

ARONA, Italian town, III. 673.

AROO, islands, III. 673.

AROPH, III. 673—Paracelsi, *ib.*

Arpad dynasty, in Hungary, XII. 11.

Arphaxad, and descendants, VIII. 46.

ARPINAS (Giuseppe Cesare), painter, III. 673.

ARPINO, town of Naples, III. 674.

ARQUA, Italian town, III. 674—Petrarch's residence at, XVII. 499.

ARQUES, in France, III. 674.

ARRACAN, III. 674; IV. 651—war in 1825, V. 646.

ARRACK, III. 675; VI. 394; VIII. 47; XX. 798.

ARRAGON, III. 674. See Aragon.

Arragona (L.), his works on insects, IX. 16.

Arragonite, XV. 92—refraction of, XVI. 659.

ARRAIGNMENT, in law, III. 675.

ARRAN, island, III. 675; VI. 27; XI. 278.—islands off the Irish coast, III. 676; VIII. 105.

—(Earl of), XIX. 776.

—(Earl of), under James VI., XIX. 788.

ARRAS, city in France, III. 676; XVII. 332—tapestries of, XXI. 20.

ARRASWISE, in heraldry, III. 676.

ARRAY, in law, III. 676.

ARRATERS, III. 676.

Arreboe (A. Christensen), XIX. 692.

ARRENTATION, III. 676.

ARREOYS, III. 676.

ARREST, III. 677—of judgment, *ib.*

ARRESTMENT, in Scottish Law, III. 678.

Arretium, III. 523; IX. 358, 359.

ARRELE, III. 678, 524.

Arrhenius (J. E.), his work on insects, IX. 11.

ARRIA, wife of Cæcina Pætus, III. 678.

ARRIAN, Roman historian, III. 678—his account of Beloochistan, IV. 639.

—bird, XVI. 738.

ARRIAZA (Juan Bautista), III. 678.

ARRIEGE, III. 678. See Ariège.

Arrindy silk-worm, IX. 212; XX. 288, 289.

ARRIS, III. 678, 507.

—fillet, or Tilting-fillet, III. 678.

ARROE, island, III. 678.

ARROW, III. 678, see Archery—makers, *ib.*—grass, order of plants, V. 214.

—(Lough), XX. 329.

—root, III. 678; V. 211—of the Bermudas, IV. 668—adulterations of, IX. 769.

Arrow-headed writing. See Cuneiform inscriptions.

ARROWSMITH (Aaron), III. 679.

ARSACES VI., otherwise Mithridates, III. 679.

—kings of Parthia, XVII. 310, 435.

Arsacidæ, Persian dynasty, XVII. 435.

Arsberger (Prof.), on the force of steam, XX. 557.

ARSENAL, III. 679—of Venice, XXI. 538—Toulon, 317—naval, see Dockyards—military, see Woolwich.

—library of the, XIII. 408.

ARSENIC, III. 679; VI. 494; XV. 65; XVII. 623—native, XV. 114—mines of, XV. 246—its allies with antimony, VI. 494—its action as a poison, XVIII. 128, 129, 132, 133—antidotes to, 134—poisoning with, XIV. 432—means of detection, 433—in mineral waters, XV. 38—administration of, to horses, XXI. 567—used for poisoning rats, 548.

—acid, VI. 495; XV. 61.

—antimony, XV. 114—silver, *ib.*—glance, *ib.*

Arsenical pyrites, XV. 115.

Arseniosiderite, mineral, XV. 102.

Arsenious acid, VI. 495; XV. 61.

Arsenite, mineral, XV. 113.

Arsenites of copper, VIII. 319.

Arseniuret of manganese, XV. 117; of cobalt, VI. 492.

ARSENIUS, III. 679.

ARSENÖE, mother of Ptolemy I., III. 679—name of various cities, *ib.*

ARS—ART

- Arsenoe, XI. 391.
 ARSON, III. 679; XIV. 427.
 ARSOOR, battle of, VIII. 481.
 ARSURA, III. 679.
 Art, distinguished from science, XIX. 734.
 Art-treasure Exhibition at Manchester, XIV. 256—Art Institution in London, XIII. 675.
 ART AND PART, in Scottish law, III. 679.
 ARTA, town in Albania, III. 679; II. 661.—gulf of, III. 680.
 ARTABA, ancient measure, III. 680.
 Artabanus, XVII. 310, 313.
 ARTABAZUS, III. 680.
 ARTAXERXES, name of several Persian kings, III. 680; VIII. 465—founder of the dynasty of the Sassanidae, XVII. 435—revolt against the Parthians, 313.—Longimanus, VIII. 466; XVII. 434.
 —Mnemon, XVII. 434.
 —Ochus, his subjugation of Egypt, VIII. 467.
 Artaxias, III. 615.
 ARTEDI (Peter), naturalist, III. 680—on fishes, XII. 205, 206—his intimacy with Linnaeus, XIII. 498.
 Artemia salina, VII. 543—A. Oudneyi, IX. 532.
 ARTEMIDORUS of Ephesus, III. 680; X. 467.
 ARTEMIS, III. 680; IX. 268.
 —genus of mollusks, XV. 350—fossil, XVII. 108.
 ARTEMISIA, queen of Caria, III. 680.
 —wife of Mausolus, III. 680—monument erected by, to her husband, XIX. 857.
 —a genus of plants, III. 680; V. 197.
 ARTEMISIUM, promontory, III. 680.
 ARTEMON, ancient painter, III. 680.
 —heretic, III. 680.
 Arteries, their structure, II. 789; III. 65; XVII. 653—functions, 661—anatomical connections of the arterial system, II. 791—modes in which they terminate, 792, 797—generally accompanied by veins, 795, 796; but not always, 796—manner in which they pass into capillary vessels, 798—helicine arteries, 801—early opinions respecting them, 750 *et seq.*—comparative anatomy of, III. 112—aneurism of, XX. 828, 829.
 ARTESIAN WELLS, III. 681—natural siphons, XII. 82.
 ARTEVELDE (James Van) III. 681; X. 16, 601.
 ARTHREITIC, III. 682.
 Arthropotama, order of mollusks, XV. 336.
 Arthropterus, genus of fossil fishes, XII. 342.
 ARTHUR, hero of the Britons, III. 682; XIX. 743—Arthur's round table, III. 682—Arthur's Knights of the Round Table, VI. 622; XIII. 111—Arthur's oven, VI. 276—Arthur's Seat, III. 682; basalt of, XV. 190—Arthur's Seat, in Nova Scotia, XVI. 343.
 —governor of Tasmania, on the Aborigines of that country, XXI. 31.
 Articerus, genus of insects, IX. 153.
 Artichoke, V. 197—culture of, XI. 743—Jerusalem artichoke, II. 321; IX. 760; XI. 739.
 ARTICLE, in grammar, III. 682; X. 749, 791—in Egyptian language, XI. 422, 426.
 Articles of Faith, I. 541—thirty-nine articles, VII. 486.
 —of war, XVI. 107.
 ARTICULATA, III. 682; II. 772; IX. 25; XV. 322—their organs of smell, III. 94—of vision, 98—nervous system, 105—their structure, 185—Cuvier's division of, 192—characters of, 183, 192—fossil, XVII. 100, 640—number known, 631.
 Articulation of bones, II. 830—of the spine, III. 8—shoulder, elbow, wrist, and fingers, III. 34—hip, 36—knee, 37—ankle, *ib.*—in the mammalia, XIV. 132.
 ARTIFICER, III. 682.

ART—ASA

- ARTIFICIAL HORIZON, III. 682.
 —manures, II. 305.
 ARTILLERY, III. 683—meaning of the word, 424—field, 688—siege, 691—garrison, 693—for coast defences, 695—exercise of, 696—park, 704—train, 705—Austrian, 645—French, 641—Spanish, 643—British, 665—Belgian, 654—Prussian, 646—Russian, 649—Turkish, 658—different kinds formerly in use, XI. 136—different kinds of fire of, 141—marine, pay of, XVI. 113. See Cannon, Gunnery, War.
 ARTIST, III. 705.
 ARTOCARPÆ, or Artocarpaceæ, nat. order of plants, III. 705; V. 206.
 Artocarpus incisa. See Bread-fruit.
 ARTOIS, French province, III. 705; X. 276.
 —(Count d'), X. 15 *et seq.*
 ARTOTYRITES, early religious sect, III. 705.
 ARTS (useful), III. 705—original invention of, I. 453—boundaries of art and science undefined, 805—their connection with physical science, 807—limits of art, 808—application of electricity to the, I. 984; XXI. 638—multiplying works of art by, *ib.*—in Peru, II. 685—Egypt, VIII. 443, 447.
 —(fine), III. 707—Grecian and Italian works in, 709—French and Spanish, 712—their progress in Britain, *ib.*—schools for promoting the, 718—Corinth, the seat of, VII. 368—academies of the, II. 67—exhibitions of works in the, IX. 453—among the Etruscans, 359—institutions of, in London, XIII. 675—societies for, in New York, XVI. 230—illustrations of, from numismatics, 351, 352, 356, 357, 382, 387—their importance in history, XI. 538—in Holland, 591—Portugal, XVIII. 399—how regarded by Quakers, 722—organization of art, XIX. 107—relation between arts and their theories, 109—data for theories of, 110—in Russia, 530. See Painting, Sculpture.
 —degrees in, III. 720. See Universities.
 —unions, XIII. 697.
 Artza, VII. 314.
 Arneris, Egyptian Apollo, XI. 383.
 Arum maculatum, plant, V. 214—evolution of heat by, 149.
 Arun, river in Sussex, XX. 839.
 ARUNDEL, town in Sussex, III. 720.
 —(Thomas), archbishop, III. 720.
 ARUNDELIAN, or Oxford Marbles, III. 720—Selden's work on, XX. 37.
 ARUSPICES, or Haruspices, III. 720; XI. 235.
 ARVA, in Hungary, III. 720.
 ARVALES FRATRES, III. 720; II. 652; XIV. 305.
 ARVE, Swiss river, III. 721; XX. 888.
 Arvicola, genus of mammalia, XIV. 183—teeth of, XVI. 454.
 Arvidsson (A. Iwar), Swedish poet, XIX. 700.
 Arvieux (M. d'), on Arabian horses, III. 346.
 ARVIL SUPPER, III. 721.
 ARVIRAGUS, British king, III. 721.
 ARX, III. 721.
 Arya-Bhatta, Hindoo algebraist, II. 487.
 Aryiodactyla, group of mammals, XVII. 165.
 Arymbas, I. and II., kings of Epirus, IX. 277.
 Arytenoid cartilages, III. 50.
 Arzachel, astronomer, III. 795.
 ARZEW, seaport of Algiers, III. 721.
 ARZILLA, town of Morocco, III. 721.
 As, an ancient weight, III. 721—Roman coin, *ib.* VII. 67; XVI. 360, 383, 384; XV. 432.
 Asaff, town in Morocco, XIX. 570.
 ASAHËL, III. 721.
 ASAPH, III. 721—Psalms ascribed to, XVIII. 679.
 —(St), city in North Wales, III. 721.
 Asaphus, trilobites, XVII. 102.
 ASAR-ADDON, III. 722, 778.

ASA—ASH

- ASAROTUM, III. 722.
 ASBESTOS, III. 722; II. 716; XII. 367; XV. 81—mines of, in Anglesea, III. 146—specific gravity of, XII. 88—paper made from, XVII. 251.
 Ascalaphus, genus of insects, IX. 178.
 ASCALON, III. 722; XVII. 182, 514—battle of, 196.
 ASCANIUS, son of Æneas, III. 722.
 Ascaris, genus of entozoa, XXI. 980, 974 *et seq.*—in horses, 569.
 ASCENDANT, in astrology, III. 722.
 ASCENSION, island, III. 722; II. 229.
 —DAY, III. 723.
 —in astronomy, III. 723; IV. 3.
 Ascensius (Badius), printer, XXI. 401.
 ASCETERIUM, III. 723.
 ASCETIC, III. 723.
 ASCHAFFENBURG, in Bavaria, III. 723.
 ASCHAM (Roger), III. 723; VIII. 796—notice of Queen Elizabeth by, 635—account of Lady Jane Grey, in his Schoolmaster, XI. 63—on *Morte d'Arthur*, XIX. 263.
 ASCHERSLEBEN, a circle and city in Prussia, III. 724.
 Ascia, genus of insects, IX. 239.
 Ascidia, genus of mollusks, XV. 334—A. gelatinosa, 333.
 Ascidiadae, family of mollusks, XV. 333.
 Ascidiarians, mollusks, compound, XV. 330; propagation of, 331, 332—solitary, 332; propagation of, 333.
 Ascidiiformes, zoophytes, XXI. 986.
 ASCH, III. 724.
 ASCITÆ, a sect of Montanists, III. 724.
 ASCITES, III. 724; XVII. 690—in cattle, XXI. 567.
 ASCLEPEIA, festival, III. 724.
 ASCLEPIAD, III. 724.
 Asclepiadaceæ, nat. order of plants, V. 199.
 ASCLEPIADÆ, III. 724; XIV. 451.
 Asclepiades, XIV. 453—on mental disorders, 527—their surgery, XX. 810, 812.
 ASCLEPIODORUS, III. 724; XVII. 57.
 Ascoceras, fossil mollusks, XVII. 112.
 ASCOLI, city of Italy, III. 724—delegation of, XVII. 243.
 ASCOLIA, festival, III. 724.
 ASCOLIASMUS, III. 724.
 Ascolino, X. 469.
 ASCONIUS (Q. Peditanus), III. 725.
 ASCRIPTICI, III. 725; II. 74.
 ASCRIPTITII, III. 725.
 ASDRUBAL, III. 725; VI. 292; XX. 457—defeated by the Romans, VI. 297, 298—his cruelties, 301, 303—suicide of his wife, 303.
 ASELLIO (Gasparo), III. 725—his discovery of the lacteal vessels, II. 761, 803.
 ASH, III. 725.
 —mountain, XVII. 759—juice of its berries in dyeing, VIII. 286.
 —prickly, order of plants, V. 189.
 —residuum of combustion, XX. 352—of agricultural plants, II. 385, 386—of timber trees, XXI. 268.
 —timber, XVII. 758; XXI. 274—used in coachmaking, VII. 43—specific gravity of, XII. 89—strength of the wood, XX. 757, 758.
 —tree, V. 199; XVII. 758—varieties of, 764.
 —use of the term in geology, XV. 188, *n.* 1.
 ASHANTEE, in Western Africa, III. 725; II. 227.
 ASHBOURNE, town in Derbyshire, III. 727.
 ASHBURTON, town in Devonshire, III. 727—group of rocks, XV. 199.
 —(Lord). See Dunning.
 —(Lord), north-eastern boundary treaty settled by, XXI. 796.
 ASHBY-DE-LA-ZOUCH, III. 727—population, XIII. 321—canal of, XXI. 738.
 Ashcroft's railway chair, XVIII. 759.
 ASHDOD, III. 727; IV. 337; XVII. 182, 514.
 ASHES, III. 727—proportion found in different plants, and the different parts of plants, II. 385, 386; V. 96—composition of, II. 386.
 Ashey Down and Beacon, Isle of Wight, XXI. 861.

ASH—ASP

- ASHFORD, in Kent, III. 727.
 ASHI, or Asser, III. 727.
 Ashkanian kings of Persia, XVII. 435.
 Ashkoko, quadruped, XIV. 199.
 ASHLAR, III. 727—walls, V. 738.
 ASHMOLE (Elias), antiquary, III. 727—founder of the Ashmolean Museum at Oxford, 728; XVII. 35.
 ASHOVER, in Derbyshire, III. 728.
 Ashpítel (Mr), on the proportion of stairs, XII. 813.
 ASHRAFF, town in Persia, III. 728.
 ASHTAROTH, III. 728.
 ASHTON-UNDER-LYNE, in Lancashire, III. 728.
 ASHTORETH, III. 728—worshipped by the Phenicians, XX. 906.
 Ashur, VIII. 46.
 ASH-WEDNESDAY, III. 725—confession of sins upon, VII. 201.
 ASIA, III. 729—prevalence of castes in, VI. 314—British colonies in, VII. 147—trade with England, VIII. 732, 733—entomology of, IX. 68—ethnology, 344, 351—portions of, known to the ancients, X. 464—languages, XIII. 205 *et seq.*, 215; XVII. 527 *et seq.*—invasion of, by Alexander the Great, 766—origin of the medical profession in, XIV. 450—extent of its coast line, XVII. 585—mean elevation of its surface, 590—snow level, 602—mammals of, 631, 632—birds, 633, 634—height of mountains, 643—rivers, 606, 607—volcanoes, 589; XXI. 603; plants, XVII. 627, 628; V. 225, 228—serpents, XIX. 53—reptiles, 30, 35 *et seq.*; XVII. 634—a Roman province, XIX. 315—Cæsar's campaigns in, 326—trade with Russia, 541—course of its rivers, 181—map of, III. Plate.
 —MINOR, III. 758—Greek colonies in, VII. 135—its fitness for immigrants, VIII. 650—mountains of, XVII. 597; their heights, 643, 644—plants, 627—missions in, XV. 271—coins of, XVI. 374, 375—architectural remains in, III. 498, 503—silk, XX. 277—Osmanlis in, XXI. 378.
 ASIARCHÆ, pagan pontiffs of Asia, III. 760.
 Asiatic islands, volcanoes of, XXI. 603.
 —SOCIETIES, III. 759.
 Asiatics, IX. 344.
 ASIENITO, III. 760.
 Asilici, family of insects, IX. 234.
 Asilus, genus of insects, IX. 235.
 ASINARA, island, III. 760.
 ASINIUS POLLIO, III. 760.
 Asiphonata, section of mollusks, XV. 381.
 Asirica, genus of insects, IX. 169.
 Ask (Robert), rebel, VIII. 702.
 ASKEATON, Irish town, III. 760.
 ASKERN, in Yorkshire, III. 760.
 ASKEW (Anne), III. 760.
 ASKRIGG, in Yorkshire, III. 760.
 Asmanshausen, wines of, XXI. 885.
 ASMODEUS, III. 760. See Abaddon.
 ASMONEUS, III. 760.
 Asmuss (H. M.), his work on insects, IX. 19.
 ASNA, III. 760. See Esne.
 ASOLO, Italian town, III. 760.
 ASOPH, III. 760. See Azoph.
 ASP, poisonous serpent, III. 760.
 ASPARAGINE, III. 760, 762; VI. 518.
 Asparaginous plants, XI. 742.
 ASPARAGUS, III. 760; IX. 761—culture of, XI. 742.
 —stone, XV. 94.
 ASPASIA of Miletus, III. 760; XVII. 789; XX. 371, 373, 382.
 ASPECT, in astronomy, III. 760—characters of abbreviations of the aspects, VI. 419.
 ASPECTANT, in heraldry, III. 760.
 Aspen-tree, XVII. 759.
 ASPER (Spiritus), in grammar, III. 760; II. 613.
 Aspergillum, genus of mollusks, XV. 350, 352—fossil, XVII. 108.
 Asperifollæ, family of plants, V. 201.
 ASPERMOUS, in botany, without seed, III. 760.

ASP—ASS

ASPERN, Austrian village, III. 760.
 ASPEROSA, Turkish town, III. 760.
 ASPHALTITES, lake, III. 760; XII. 735; XV. 145; XVII. 187, 189, 591. See Dead Sea.
 ASPHALTUM, III. 762; IV. 736; XV. 124—pavements made of, XIX. 227; XX. 715—lake of, in Trinidad, XXI. 351. See Bitumen.
 ASPHODELEÆ, order of plants, III. 762.
 Asphodelodians, VI. 286.
 ASPHYXIA, III. 762; XIV. 430; XVII. 663—
 from drowning, VIII. 181.
 Aspic, serpent, XIX. 52, 71.
 ASPICUETA (Martin de), III. 762.
 Aspidiscus, fossil corals, XVII. 97.
 Aspidogaster, genus of zoophytes, XXI. 982.
 Aspidoparia, genus of fishes, XII. 257.
 Aspidophorus, genus of fishes, XII. 282.
 Aspidorhynchus, genus of fossil fishes, XII. 336.
 Aspinwall, town in Panama, XVII. 226.
 Aspirate, II. 613.
 Aspistes, genus of insects, IX. 230.
 Aspredo, genus of fishes, XII. 260, 263.
 Aspro, genus of fishes, XII. 275.
 Ass, III. 762; XIV. 201—milk of, XV. 11—
 Arabian wild, III. 347—Asiatic, 740—Indian wild, XI. 456—in Egypt, VIII. 432—in Beykaneer, IV. 691—in Europe, IX. 387—Palestine, XVII. 191—Persia, 423—organs of voice, III. 101—strength of, XIV. 417.
 Assa, Egyptian king, VIII. 457.
 ASSAFETIDA, III. 762; V. 195; XVII. 421.
 Assahan, in Sumatra, XX. 806.
 Assal, lake in Abyssinia, II. 55.
 ASSAM, III. 762; IV. 651—tea-plant in, 649; XXI. 81—analysis of the tea-growing soil in, 84—value in the market, 91—mountains, XVII. 598.
 ASSARIUM, ancient copper coin, III. 765; XVI. 384.
 ASSASSIN, III. 765.
 Assassination, in Virginia, XIII. 750—in Scotland, in the sixteenth century, VI. 626.
 ASSAULT, in Law, III. 766.
 ASSAY, III. 766.
 Assayer, VII. 74.
 ASSAYING, III. 766—touch-needle, XXI. 316.
 Asselota, crustacea, VII. 543.
 ASSELYN (Hans), Dutch painter, III. 774.
 ASSEMANI, III. 774.
 ASSEMBLY, III. 775—of the people at Athens, IV. 214.
 —General, of the Scottish Church, III. 775; XVIII. 493, 489—Hall, in Edinburgh, VIII. 399—schools, XV. 825.
 —national, of France, X. 50.
 ASSEN, III. 775.
 ASSENEDE, town of Belgium, III. 775.
 ASSENHEIM, III. 775.
 ASSENS, Danish town, III. 775.
 ASSER (John), III. 776.
 Assessed taxes, in Scotland, XIX. 809.
 ASSESSOR, III. 776.
 ASSETS, in law, III. 776.
 ASSIDEANS, III. 776.
 ASSIDUI, III. 776.
 ASSIGNAT, III. 776.
 ASSIGNMENT, III. 776; IV. 417.
 ASSIMILATION, III. 776; XVII. 663—organs of, in the crustacea, VII. 539.
 ASSINIE, country in Africa, III. 776.
 Assises de Jerusalem, IX. 525.
 ASSISI, Italian city, III. 776.
 ASSITHMENT, III. 776.
 ASSIZE, III. 776—of bread, IV. 234.
 Associate Synod of Original Seceders, XVIII. 500, 502.
 ASSOCIATION, III. 776.
 —African, II. 201.
 —agricultural chemistry, II. 265, 374.
 —British, for the Advancement of Science, III. 816.
 —OF IDEAS, III. 776; VII. 675; XIV. 594; XV. 286; XIX. 115—laws of, XIV. 595—its power in regard to avarice, &c., I. 382, 384—Mackintosh's theory of, considered, 305—in connec-

ASS—AST

tion with the sense of the beautiful, IV. 541 *et seq.*—Condillac on, VII. 234—its influence in dreams, VIII. 176—Plato on, XVII. 805.
 Association (Royal), for promotion of the fine arts in Scotland, VIII. 397.
 ASSOILZIE, in law, III. 776.
 ASSONANCE, III. 776.
 ASSUAY, in Ecuador, III. 777.
 ASSUMPSIT, in law, III. 777.
 ASSUMPTION, festival, III. 777—in logic, *ib.*—deed of, *ib.*—island, *ib.*—capital of Paraguay, *ib.*, XVII. 268.
 ASSUMPTIVE ARMS, in heraldry, III. 777.
 ASSURANCE, or Insurance, III. 777. See Annuities, Insurance.
 ASSUS, ancient city of Mysia, III. 777.
 ASSYE, in Southern India, III. 777—defeat of Scindia at, XI. 167.
 ASSYN-KALESSI, village in Asia Minor, III. 777.
 Assynt, in Sutherland, XX. 840.
 —(Loch), XIX. 794; XX. 840.
 ASSYRIA, III. 777; XVI. 272—architecture of, III. 438, 500—tabular libraries of, XIII. 382—origin of the name, XX. 901—Assyrian empire, III. 741; monarchy, XI. 542; XV. 412—language, XIII. 209—bricks of, XVIII. 431—sculpture of, XIX. 846.
 ASTABAT, Persian town, III. 779.
 Astacilla, genus of crustacea, VII. 542.
 Astacus fluviatilis, VII. 542.
 ASTAFFORT, French town, III. 779.
 Astarte, goddess, III. 728—genus of mollusks, XV. 150—fossil, XVII. 107.
 Astartidae, family of insects, XV. 350—fossil, XVII. 107.
 Astata, genus of insects, IX. 196.
 Astatic needle, XIV. 90; I. 976.
 Asteia, genus of insects, IX. 256.
 ASTELL (Mary), III. 779.
 ASTELL's island, III. 779.
 Asteracanthion, zoophytes, XXI. 995.
 Asteracanthus, genus of fossil fishes, XII. 340.
 Asteraceæ, nat. order of plants, V. 196.
 Asteriadeæ, fossil star-fishes, XVII. 99.
 —zoophytes, XXI. 984, 994, 995.
 ASTERISK, III. 779.
 ASTERISM, III. 779; IV. 12, 79.
 Asterothymus, genus of fossil fishes, XII. 342.
 Asteroidea, fossil polypes, XVII. 96.
 —zoophytes, XXI. 1003—arrangement of, 1004.
 Asteroidea, fossil echinoderms, XVII. 99.
 ASTEROIDS, III. 779—discovery of, I. 835, 859; IV. 91—the greater number discovered by Mr Hind and M. Gasparis, *ib.*—list of, I. 859, 996; IV. 91.
 Asterolepis, genus of fossil fishes, XII. 337; XVI. 719; XVII. 120, 125.
 Asteropterychius, fossil fishes, XVII. 117.
 Asteropteryx, genus of fishes, XII. 307.
 A-STERN, sea-term, III. 779.
 ASTI, in Piedmont, III. 779—wines of, XXI. 886.
 ASTLE (Thomas), antiquary, III. 779—on the origin and progress of writing, II. 612; IV. 706.
 Astley (Mr), his method of manufacturing sal-ammoniac, II. 723.
 Astolphus, Longobard king, XII. 642; XIII. 642.
 Astoma, genus of arachnides, III. 389.
 ASTOMOUS, III. 779.
 Astor (J. J.), X. 346; XVI. 225.
 —House, hotel, XVI. 225.
 —Library, at New York, XIII. 430; XXI. 424.
 ASTORGA, Spanish city, III. 779.
 ASTORIA, a settlement in Oregon, III. 779; X. 346.
 ASTRABAD, in Persia, III. 779, 780.
 ASTRÆA, III. 780—planet, IV. 91; I. 859.
 Astræideæ, fossil corals, XVII. 97.
 Astragal, in architecture, III. 507.
 Astragalus, or heel-bone, III. 36, 37.
 —genus of plants, V. 190.
 ASTRAGALOMANCY, III. 780.
 ASTRAKAN, III. 780; XIX. 473—climate of, XIV. 674.

AST—AST

Astrakanite, mineral, XV. 99.
 Astral lamp, XIII. 171.
 Astrapæus, genus of insects, IX. 103.
 Astrape, genus of fishes, XII. 327.
 Astrapia, genus of birds, XVI. 768.
 Astreidæ, zoophytes, XXI. 1005.
 ASTRINGENTS, III. 780.
 Astroblepus, genus of fishes, XII. 262, 260.
 Astrodermus, genus of fishes, XII. 298.
 ASTROLABE, III. 780; XX. 124.
 ASTROLOGY, III. 780; IV. 435; VIII. 54—its extensive dominion over the human mind, I. 600—taught in universities, *ib.*—introduced into almanacs, II. 598—Babylonians addicted to, IV. 347—in Chaldæa, VIII. 54—Persia, XVII. 430.
 Astronomical instruments, IV. 149, 110; I. 847—Borda's repeating circle, V. 37—Cavendish's method of dividing, VI. 354. See Quadrant, Telescope, &c.
 —tables, IV. 120—139.
 —Royal, Society of London, III. 815—founded by Baily, I. 852.
 ASTRONOMY, III. 781—history of, *ib.*; I. 800, 801—theoretical, IV. 1—physical, 96; I. 809, 824—practical, IV. 109; I. 832—sidereal, 838, 861—nautical, XVI. 34—considerable progress made by the ancients in, I. 567, 597—views of those who first studied the heavens, 597, 771—universally believed by the ancients that the earth formed the centre of the universe, 598—introduction of the epicycle by Apollonius Pergæus, *ib.*—application of the epicycles to explain phenomena by Hipparchus, *ib.*—other epicycles introduced to explain the irregular motion of the moon and planets, *ib.*—the system of the heavens thus became extremely complicated, *ib.*—advantages which were derived from the epicycle, 599—the hypothesis of epicycles and of centres of uniform motion accommodated to the state of science, *ib.*—dawn of a new era, Copernicus and Tycho, 600—correction of Ptolemy's tables, by Alphonso, king of Castile, *ib.*—contributions to the science by Furbach and Regiomontanus, *ib.*—publication of Copernicus's great work *Astronomia Instaurata*, containing the discovery of the earth's annual and diurnal motion, 601—observations of the heavens by Brahe, 602; see Brahe—discoveries of Kepler and Galileo; see these articles—evidence of the Copernican system developed by these discoveries, 608—beneficial results of it being established, 609—Descartes' theory of the universe; see Descartes—first complete system of astronomy in which the elliptic orbits were introduced was the A. Philolaica of Bullialdus, 611—hypothetical views contained in that work, *ib.*—contributions to the science by Horrox, Ward, Riccioli, Hevelius, Hooke, Cassini, and Roemer; see these heads—first establishment of academies, 615—figure and magnitude of the earth; see Figure of the Earth—discovery of universal gravitation by Newton, 670; see also Newton—references of the ancients to weight or gravity, 673—clearer views of Copernicus and Kepler, 674—Galileo believed that gravity was a principle belonging to each of the planets individually, but not extending from the one to the other, 675—near approximation to the truth by Hooke, *ib.*—causes of irregularities in the motion of the moon, 676—Newton's determination of the shape of the earth, 677—discovery of the aberration of light by Bradley, 685—Newton's theory of the moon a work of genius almost superhuman, 779—lunar theory first expanded and improved by Calandrini, *ib.*—completed by Dr Stewart and Walmsley, 780—examination of the subject by Clairaut, *ib.*—astronomical discoveries of Mayer, 781; see also Mayer—calculations and discoveries of Euler regarding

AST—AST

the motions of the planets, 781, 782—appearance of Halley's comet, and calculations of Clairaut regarding its retardation, 783—size and consistency of comets, and methods of discovering their orbits, 784—notice of Lagrange's discourse on the libration of the moon, 785, 813—researches of Lagrange and Laplace regarding the planetary motions, 785, 811—Laplace's discovery of the moon's secular equation, 786—Laplace's complete theory of the motion of Jupiter's satellites, *ib.*, 815—description of celestial refraction, and the lunar and solar parallaxes, 787—discovery of a new planet by Herschel, 788—discovery of four small planets, 789—number of stars which passed over Herschel's field of view in a quarter of an hour, *ib.*—speculations regarding the celestial bodies, and the constitution of the universe, 790—various estimates of the number of comets within the known extent of our system, 791—observations on the earth's internal structure, *ib.*—on the limits of the atmosphere, 792—on double and multiple stars, 793—stability and permanence of the solar system, 811—Leverrier on the eccentricities of the larger planets, 812—motions of apsides and nodes, *ib.*—Poisson's addition to the theory, 813—Laplace's improvements in the lunar theory, 814—contributions to the science by Legendre, Abel, and Ivory, 822, 823—progress of physical astronomy since the publication of the *Mécanique Celeste*, 824—Poisson, *ib.*, 825—Airy on the perturbation of the earth by Venus, 825—MM. Plana and Hansan on the lunar theory, *ib.*, 826—progress of physical astronomy in America, 827—discovery of Neptune from theory, by MM. Leverrier and Adams, 827—irregularities of the motions of Uranus, 828; hypotheses to account for them, *ib.*—Leverrier's investigations, and their result, 829—discovery of Neptune by M. Galle, 830—Mr Adams preceded M. Leverrier in a similar investigation, *ib.*—observations on Neptune as a fixed star, 831—principal inequality of Uranus and Neptune, 832—progress of practical astronomy from 1770 till 1810—Maskelyne, 833; see that article—his determination of the lunar orbit, and its application to navigation, *ib.*—his observations on the attraction of mountains, 834—his improvements at Greenwich, 835—Mitchell and Cavendish's experiment on the density of the earth, 834—discovery of four small planets, 835—Olbers, Piazzi, Harding, Lacaille, *ib.*, 836—Delambre, 836; see that article—arcs of meridian, *ib.*, 837—Sir William Herschel, 838—history of sidereal and telescopic astronomy to 1820, *ib.*—discovery of Uranus, 840—Herschel on double stars, 841; on nebulae, 842, 843—on the grouping of the stars in space, and on the milky way, 843, 844—on the motion of our system in space, 845—modern astronomical details since 1810, 847—Bessel's contributions to the science, 848, 849—Airy's labours in physical and practical astronomy, 849—introduction of the galvanic method of observation, 850—Borda, his improvement in the manner of making pendulum observations, 851—Kater, 852—Baily, *ib.*; see that article—reduction to a vacuum, *ib.*—Prof. Stokes, 853—Col. Everest, *ib.*—M. Struve; see Index—M. Foucault's pendulum experiment, 854—Encke, 855; see Index—cometary astronomy, *ib.*, 856—Gambart, 858—Hind, 859—discovery of new planets or asteroids, *ib.*—M. de Gasparis, *ib.*—asteroids, *ib.*—Lassell, 860—new secondary planets, *ib.*—sidereal astronomy since 1820, 861—double stars, *ib.*—Sir John Herschel, *ib.*; see Index—orbital of double stars, 862—brightness of stars

AST—ATH

and variable stars, *ib.*—Earl of Rosse, 863; his reflecting telescopes, *ib.*—latest observations on nebulae, *ib.*—Henderson and Bessel, *ib.*—parallax and distance of the fixed stars, *ib.* 864—how scriptural references to, are to be interpreted, 455—Aristotle on, III. 544—catalogues of the stars, VI. 331—Chinese knowledge of, 584—knowledge of the Druids in, VIII. 185—of the Egyptians, 442—of the Japanese, XII. 694—Persians, XVII. 430—speculations of Pythagoras in, XVIII. 711—method of the least squares, 633—Adam Smith's history of, XX. 345—astronomical determinations of the periodical forces which act on the sea or on a lake, XXI. 261—astronomical observations in connection with the trigonometrical survey, 335. See Aberration, Acceleration, Dialling, Sun, Moon, the different planets, &c.

ASTRUC (Jean), physician, IV. 156.

Astur, genus of birds, XVI. 743.

ASTURIAS, IV. 156; XX. 493—Moorish kingdom of, XX. 461—Christian kingdom of, 467.

ASTYAGES, king of the Medes, IV. 157; VII. 612.

ASTYANAX, IV. 157.

ASTYNOPI, IV. 157.

Aswân, in Egypt, VIII. 514. See Syene.

ASYLUM, IV. 157—Royal Naval, XI. 49.

Asylums, lunatic, XIV. 528, 537—inmates of, VIII. 748. See Sanctuary.

ASYMMETRY, IV. 157.

ASYMPTOTE, IV. 157; VII. 275; IX. 703.

ASYNDETON, in grammar, IV. 157.

ASYOOT, Egyptian town, VIII. 505; XX. 308.

ATACAMA, in Bolivia, IV. 157, 821, 827; VI. 541, 547.

ATACAMITE, mineral, IV. 157; XV. 104.

ATAHUALPA, the last of the Incas, IV. 157; XVII. 464—his murder represented as a tragedy, II. 689.

Atak, XX. 303.

ATALANTA, IV. 157.

ATAMELIK, IV. 157.

Atarvaveda, XXI. 531.

Ataulphus, Goths under, XX. 459.

ATCHAFALYA, river, IV. 157.

ATE, IV. 157.

Ateles, genus of mammalia, XIV. 141.

ATELLANÆ FABULÆ, IV. 157; VIII. 141, 142.

ATERGATIS, IV. 157.

ATESTE, Italian town, IV. 157.

Ateuchus, genus of insects, IX. 119.

ATH or Aeth, IV. 157.

ATHABASCA, or Athapescow, river, IV. 158.

Athabaskans, people, IX. 347—language, XIII. 219.

Athalia, genus of insects, IX. 183.

ATHALIAH, IV. 158.

ATHANASIAN CREED, IV. 158—composed at the desire of Jovian, VII. 309.

ATHANASIUS (St), IV. 158—his opinion of apparitions, III. 311—death and character, VIII. 473.

ATHANATI, IV. 158.

ATHANERIK, IV. 158; VII. 310.

Atheism, XXI. 185—prevalent among the higher classes at Paris about the middle of last century, I. 181—contributed to aggravate the atrocities of the French Revolution, 182—a principle tending to, 501.

ATHEIST, IV. 158; I. 457.

ATHELING, IV. 158; VIII. 390.

ATHELINGEY, or Noble's Island, in Somersetshire, IV. 158; XX. 410.

ATHELSTAN, Saxon king of England, IV. 159—reign of, VIII. 658—his laws regarding the coinage, VII. 73.

ATHENÆUM, IV. 159—in Belgium, 619.

ATHENÆUS, mechanician, IV. 159.

—physician, founder of the Pneumatic sect, IV. 159—on the use and qualities of wine, XXI. 882.

—grammarians, IV. 159.

ATHENAGORAS, IV. 159; IX. 492.

Athenians, demoralising effects of a severe

ATH—ATK

pestilence on, I. 460, 461—their disbelief in a future state, *ib.*—their mode of punishing adultery, II. 155—their national character, IV. 210—effects of their political institutions on, 212—their attachment to the drama, VIII. 135—their love of speculative inquiries, IV. 211—their mode of life unfavourable to the formation of eccentric characters among them, VIII. 141—their war with the Sicilians, IV. 205—their religion, 216—their personal beauty not remarkable, XIX. 850—funeral rites, X. 344—their attacks on Syracuse, XX. 899.

ATHENODORUS, IV. 159.

ATHENRY, Irish town, IV. 159.

ATHENS, IV. 159—Academy of, II. 59—choragic monument of Lysicrates at, III. 442, 444, 462; of Thrasylus, 462—Stuart and Revett's Antiquities of, 456—the Parthenon, 461—Propylæum, 462—Acropolis, II. 116; III. 466—army of, 625—taken by Xerxes, IV. 200—rebuilt and fortified, *ib.*—plague at, 204—captured by the Spartans, 208—restored to liberty by Thrasybulus, 210—commerce of, VII. 185—the Thirty tyrants, IV. 208—dials on the Tower of the Winds, VII. 774—dials of Phædrus, *ib.*—tragic writers of, VIII. 138—comic writers, 139—Elgin marbles brought from, 632—monarchy of, XV. 412—coinage of, XVI. 359, 371—state of philosophy in, in the time of Plato, XVII. 793, 795—works on its topography, IV. 159, *n.* 172—improved by Pericles, XVII. 412—decline of art in, XIX. 858—its condition in the time of Socrates, XX. 370—war with Sparta, 501—hostility between Athens and Thebes, XXI. 177.

—(Modern), XI. 17; IV. 174—sieges in the late revolutionary war, *ib.*

—several towns in U.S. so named, IV. 174.

Atherina, genus of fishes, XII. 291–2.

Atherine, family of fishes, XII. 291.

Atherinidæ, family of fishes, XII. 292.

Atherix, genus of insects, IX. 232.

ATHEROMA, in surgery, IV. 174.

Atherospermaceæ, nat. order of plants, V. 204.

ATHERSTON, in Warwickshire, IV. 174; XXI. 738.

ATHERTON, in Lancashire, IV. 174—battle of Atherton Moor, V. 404.

Atherura, genus of mammalia, XIV. 187.

ATHIAS (Joseph), IV. 175—his edition of the Hebrew Bible, 697.

ATHLETE, IV. 175.

ATHLONE, in Ireland, IV. 175; XIX. 422; XXI. 839, 841—taken by the English in 1690, V. 443.

ATHOL, in Perthshire, IV. 175—deer forest of, XX. 212.

—(Duke of), Isle of Man purchased from, XIV. 248—salmon caught by, IX. 598.

Athor, Egyptian deity, VIII. 437; XI. 384, *n.* 11.

Athorybia, genus of zoophytes, XXI. 1006.

ATHOS, IV. 175; XI. 11.

Athôthis, Egyptian king, VIII. 454.

Athribis, in Egypt, VIII. 497.

ATHY, in Kildare, IV. 175; XIII. 83.

Athyris, fossil mollusks, XVII. 103, 104.

ATIENZA, Spanish town, IV. 175.

ATILIUS (M.), Roman poet, IV. 175.

ATIMIA, IV. 175.

ATINA, Neapolitan town, IV. 175.

Atitlan, lake, XI. 76.

ATKINS (Sir Robert), IV. 175—his son, 176.

Atkinson (Stephen), his work on the gold mines of Scotland, XV. 233, *n.*

—on the Altai mountains, XVII. 599.

—(Mr), on Mesmero-phrenology, XX. 440.

Atkinson's melon-pit, XI. 734.

Atkoo, Egyptian lake, VIII. 429.

ATKYNs (Richard), IV. 176; XVIII. 534.

ATL—ATM

Atlanta, genus of mollusks, XV. 368, 375—fossil, XVII. 109.

ATLANTES, IV. 176.

ATLANTIC OCEAN, IV. 176; XVII. 576—methods of sounding, XX. 26—commencement of steam-navigation across, 639—basin of the North Atlantic, XVII. 574, 575—temperature of, 577—Atlantic islands, volcanoes of, XXI. 603. See Gulf Stream.

—telegraph, XXI. 113, 94, 95, 99, 109.

Atlantidæ, family of mollusks, XV. 375.

ATLANTIDES, the seven stars, IV. 177.

ATLANTIS, IV. 177.

—the New, title of one of Lord Bacon's works, IV. 177.

ATLAS, king of Mauritania, IV. 177; XIV. 360—inventor of astrology and the doctrine of the sphere, 361.

—mountains in Africa, IV. 177; XV. 593; XVII. 596—height of, 644.

—book of maps, IV. 177.

—one of the vertebræ, IV. 177; III. 5, 75—its motions, 8.

—a kind of silk, IV. 177.

ATMOMETER, IV. 177; I. 769; XIII. 344.

ATMOSPHERE, IV. 178—discovery of its elasticity, I. 597—experiments to ascertain its density at different heights, 729—its action on the spectrum, 915; XVI. 598—sound transmitted by the, II. 98, 103—velocity of sound, 104—schemes for navigating the, 168—diminution of its temperature at increasing heights, 182; XIV. 640—its composition everywhere essentially the same, II. 184; VI. 464—its refrigerent power, IV. 9—of the sun, 30; XIV. 639—moon, IV. 43—Venus, 66—Mars, 67—Ceres, Pallas, and Vesta, 68, 69—its pressure, 450, 451; VI. 464; XIV. 638; XVIII. 26—gradation of its density, IV. 462—G. Becaria on its electricity, 560—its composition, VI. 463—why warmest in its lowest strata, 778—its capacity for heat at different degrees of rarity, *ib.*—circulation of air between the poles and the equator, 782—Cavallo on, 345—Cavendish on, 352—air discharged from water in the act of freezing or boiling, VII. 103—ammonia in, VI. 462; II. 376—carbonic acid in, VI. 464; II. 375; oxygen in, VI. 464—a source of the organic constituents of plants, II. 375—quantity of, necessary for respiration, VIII. 55—remarkably dry and clear in Egypt, 422—electricity of the, 577; I. 962; XIV. 660; XXI. 116—influence of its density on evaporation, IX. 412—no muriatic acid in sea air, 415—resistance to projectiles, XI. 106, 115 *et seq.*; XVIII. 67; to the motion of the pendulum, I. 853—specific gravity of, XII. 89—absorbs and retains aqueous vapour, 186—Ingenhouz's experiments on, 380, 381—terrestrial magnetism supposed to reside in, XIV. 66—influence of its purity and hygrometric state on health, 443—descent of stones from, 629; theories as to their formation, 633, 634—mobility of, 636; XVIII. 623—nature and constitution of, XIV. 638—mass and extent, 639—decrease of temperature on ascending, 640, 641—relation between the temperature and pressure of, 641, 642—atmospheric waves, 650—hygrometric state of, 674—distribution of moisture through, 675—dependency of atmospheric pressure, &c., on the direction of the wind, 677—analysis of, from Cornish mines, XV. 225—refraction of, I. 823—unusual refraction and reflection of, XVI. 691—colours of, *ib.*—polarization of, 692—its influence on the pendulum, XVII. 387—its relation to physical geography, 572—total mass of, *ib.*—refraction of, in the polar regions, 584—its influence on the nature and quantity of food, 658—mechanical properties of, XVIII. 22 *et seq.*—height of, 27, 55—compressibility, 28, 51 *et seq.*—laws of hydrostatics applicable to, 29—

ATM—ATT

elasticity, 23, 30, 53—expansibility, 31, 56—heterogeneous nature of, 53—aërial pulses, 70—effects of respiration on, 73; XVII. 662—Priestley's researches, XVIII. 514, 515—effects of the different states of, on health, XIX. 608, 609—poisons disseminated by, 609—source of air for ventilation, XXI. 540; ingress and egress of, *ib.*; amount of, necessary for, *ib.*; purity of, *ib.*—temperature, *ib.*; evil effects of a vitiated, 539; wholesome effects of a pure atmosphere, *ib.* See Meteorology, Pneumatics, Projectiles, Acoustics, Climate, Cloud, Ventilation. Atmospheric dust, III. 210.

Atmospheric steam-engine, I. 867, 868; XX. 575 *et seq.*

Atna languages, XIII. 220.

Atolls, XIV. 109; XVII. 583; XXI. 1003.

ATOM, IV. 184—the simplest extended particle consists of four atoms, XX. 754.

ATOMIC THEORY, IV. 185; VI. 443—atomic volumes, 448—originated with Dalton, VII. 637; I. 935, 936—its importance to the progress of chemistry, 937—its reception in England and France, 938.

ATOMICAL PHILOSOPHY, IV. 185—its superiority to all other conjectures of the ancient philosophers concerning the material universe, I. 71—first advanced by Leucippus, XIII. 348—in the Epicurean philosophy, IX. 272.

ATONEMENT, IV. 185. See Theology.

ATROO, island, IV. 185.

Atractocerus, genus of insects, IX. 112.

ATRATO, river, IV. 185—line of canal across the Isthmus of Panama, II. 712.

ATREBATII, IV. 185, 666.

ATREUS, IV. 185.

ATRI, or Atria, Neapolitan town, IV. 185.

ATRIENSES, IV. 185.

ATRIUM, IV. 185; III. 471, 472.

Atropatene, XIV. 420.

ATROPA, a genus of plants, IV. 185; V. 201, 202. See Nightshade.

Atropaceæ, nat. order of plants, V. 201.

ATROPHY, IV. 185; XVII. 663, 690.

Atropia, alkaloid, V. 202; XIV. 438.

ATROPOS, IV. 185; XVII. 272.

Atrypa, fossil mollusks, XVII. 104, 103.

Atta, genus of insects, IX. 194.

ATTACHMENT, in law, IV. 185.

ATTACOTTI, IV. 186; V. 375; VI. 74.

Attagenus, genus of insects, IX. 115.

ATTAINER, in law, IV. 186—corruption of blood by, VII. 416.

ATTALEA, genus of palms, IV. 187.

ATTALEIA, now Adalia, city of Pamphylia, IV. 187.

Attalus, XVII. 410; XIX. 315.

ATTAR, or Otto of Roses, IV. 187; V. 191; XIII. 71; XVI. 496—preparation of, in Bulgaria, V. 760.

Attelabides, tribe of insects, IX. 138.

Attelabus, genus of insects, IX. 138.

ATTENTATES, IV. 187.

ATTENTION, IV. 187; XIV. 574; XIX. 116, 118.

ATTENUATION, IV. 187.

Atterbom, Swedish author, XIX. 700.

ATTERBURY (Dr Francis), IV. 187—his trial, 507—his share in answering Bentley's work on the Epistles of Phalaris, 658—his friendship with Pope, XVIII. 332—his letters opened at the post-office, 409—his intimacy with Swift, XX. 873.

Attic, in architecture, III. 479, 507.

—weights, XXI. 806.

ATTICA, IV. 191; XI. 12, 18—institution of castes in, VI. 315—names of months, 666—climate of, XI. 13—coinage of, XVI. 371—invaded by the Spartans, XX. 499—silver mines of, XV. 230.

ATTICUS (Herodes), an Athenian, IV. 218.

—(TITUS POMRONIUS), a Roman, IV. 218.

ATTIGNY, French town, IV. 218.

ATTILA, king of the Huns, IV. 218; XII. 26.

ATT—AUD

Attiret (Frère), VI. 593.
 Attitudes of man, III. 40, 41.
 ATTLEBOROUGH, town in Norfolk, IV. 218.
 ATTOCK, in Hindustan, IV. 218; XII. 378.
 ATTORNEY-AT-LAW, IV. 218.
 ATTORNEY-GENERAL, IV. 219.
 ATTRACTION, IV. 219—attractive force of cohesion, II. 140—capillary, VI. 207; XII. 90, 102; I. 890—theory of, XII. 96—chemical, VI. 439, 450—electrical, VIII. 536, 554, 556; I. 989—law of, VIII. 549—of spheres, *ib.*—of planes, *ib.*—of ellipsoids, I. 823—mutual, of floating bodies, XII. 95—magnetic, XIV. 19—committee of, I. 834—theorems about attractions, 823, 989, 994—Cavendish on, VI. 354. See Dynamics, Gravitation, Tides.
 — OF MOUNTAINS, IV. 233; I. 834; XIV. 335.
 ATTRIBUTE, IV. 233.
 ATTRIBUTES, in theology, IV. 233; XXI. 189—divine attributes ascribed to Christ, 209; to the Holy Spirit, 217—names of God from his, 189—in logic, IV. 233.
 ATTRIBUTIVES, IV. 233; X. 745, 790.
 ATTRUCK, Persian river, IV. 233.
 ATTU, an Aleutian island, IV. 233.
 Atum, Egyptian deity, VIII. 437.
 Aturia, fossil mollusks, XVII. 110, 112.
 Atwell (Mr), his explanation of the cause of intermittent springs, XVIII. 81.
 Atwood (George), IV. 233—on evaporation, IX. 407.
 Atwood's MACHINE, IV. 234—observations on moving bodies made by, XVII. 378.
 Atyadæ, XIII. 747.
 Atychia, genus of insects, IX. 210.
 Atypus, genus of arachnides, III. 378.
 ATYS, IV. 234—son of Croesus, VII. 507.
 AUBAGNE, French town, IV. 235.
 AUBAINE, IV. 235.
 AUBE, in France, IV. 235.
 Aubé (C.), his entomological works, IX. 19.
 AUBENAS, town in France, IV. 235.
 AUBIGNÉ (Théodore Agrippa d'), IV. 235.
 — (d'), on Luther and Melancthon, XIV. 476.
 AUBIGNY, town of France, IV. 235.
 Auboin (Stephen), his work on insects, IX. 19.
 AUBREY (John), IV. 235—his anecdotes of Lord Bacon, I. 239—his notices of Milton, XV. 20, 21, 31, 34; of Sir William Petty, XVII. 502—on Surrey, XX. 836.
 Aubry (M.), on iron bridges, XII. 578.
 AUBURN, a colour, IV. 235.
 — a town in New York, IV. 235—penitentiary or state prison at, XVIII. 571.
 AUBUSSON, in France, IV. 235.
 AUCH, city in France, IV. 235.
 Auchenia, genus of mammalia, XIV. 205.
 Auchenipterus, genus of fishes, XII. 262.
 Auchincass, ruins of, III. 215.
 AUCHTERARDE, IV. 236.
 AUCHTERMUCHTY, IV. 236.
 Auckland (Lord), governor-general of India, XI. 667—his opinion as to whether all treaties are annulled by war, V. 588.
 — capital of New Zealand, IV. 236; XVI. 234.
 — province of New Zealand, XVI. 233.
 — BISHOPS, town in Durham, IV. 236, 734.
 — islands, IV. 236, 268.
 AUCTION, IV. 236.
 AUDÆUS, IV. 237.
 AUDE, in France, IV. 236.
 AUDEBERT (Jean-Baptiste), IV. 236.
 Audinet-Serville (M.), his works on insects, IX. 19.
 AUDITORIUM, IV. 237.
 AUDITORS, IV. 236, 237.
 Auditory nerve, III. 47; XVII. 675.
 Audley (Lord James), at the battle of Poitiers, VI. 614.
 AUDOVIN (Jean Victor), French naturalist, IV. 237—his works on insects, IX. 16.

AUD—AUL

AUDRAN, several engravers of that name, IV. 237, 238—Gerard, 237; VIII. 806.
 AUDUBON (Jean Jacques), naturalist, IV. 238; XXI. 424—his work on the quadrupeds of America, XIV. 240—on North American birds, XVI. 733, 775, 812, 814—on the turtle, XIX. 18—on the alligator, 25, 26—on the harlequin snake, 56.
 Auersperg, German poet, XVIII. 119.
 AUERSTADT, in Prussia, IV. 239—battle of, X. 143; XII. 720.
 Aufidius (Cornelius), a blind Roman author, IV. 779.
 AUGERAS, IV. 239.
 AUGEREAU (Pierre François Charles), Marshal of France, IV. 239; X. 104 *et seq.*
 Augite, XV. 81—rock, 135.
 Augitic lavas, XV. 133.
 AUGRE, or auger, IV. 239.
 AUGSBURG, IV. 239, 518—railway from, 517—diet of, XIII. 736—early printing at, XVIII. 532—treaty of, 827.
 — CONFESSION, IV. 240; XIII. 736; XVIII. 823.
 AUGUR, IV. 240, 251—place in Rome consecrated to the augurs, 721.
 AUGURY, IV. 240. See Divination.
 AUGUST, IV. 240—gardening calendar for, XI. 760.
 AUGUSTA, city in the state of Maine, N.A., IV. 240; XIV. 99.
 — city in the state of Georgia, IV. 240; X. 565.
 — city in Sicily, IV. 240; XX. 244.
 AUGUSTALES, IV. 240.
 AUGUSTALIS PREFECTUS, IV. 240.
 AUGUSTAN AGE, IV. 240—of English literature, VIII. 714.
 — CONFESSION. See Augsburg Confession.
 Augustenberg (Prince), XX. 859.
 AUGUSTIN, or Austin (St), first bishop of Canterbury, IV. 240—Christianity introduced into England by, VIII. 656; IV. 646.
 — of Venice, engraver, VIII. 800.
 AUGUSTINE (St), bishop of Hippo, IV. 240—on the freedom of the will, I. 267—his doctrines and character, 325—his opinion respecting apparitions, III. 811—on beauty, IV. 537—38—on the disrepute of stage-players among the Romans, VIII. 142—resolves all virtue into love to God, XV. 562—on predestination, XVIII. 478—on theology, XXI. 181 *et seq.*
 — (St), town in Florida, IX. 667.
 AUGUSTINS, order of, IV. 241.
 AUGUSTO, or Augustow, in Poland, IV. 241.
 AUGUSTULUS (Romulus), last Roman emperor of the West, IV. 241.
 AUGUSTUS, fort, IV. 241; XII. 440.
 — CÆSAR OCTAVIANUS, Roman emperor, IV. 241; XVI. 405—reign of, XIX. 330, 333—his friendship with Horace, XI. 628—mausoleum of, III. 473—his improvements in the city of Rome, XIX. 360—Egypt under, VIII. 472—sculpture encouraged by, XIX. 858—libraries established by, XIII. 385—senate in his reign, XX. 44—Spain under, 458.
 — king of Poland, XVIII. 144; XIX. 478; XX. 853, 854.
 Auks, birds, XVI. 810; XVII. 176.
 AULA, IV. 241—regia, *ib.*
 Aulacanthus, genus of fossil fishes, XVII. 117.
 Aulacocephalus, genus of fishes, XII. 276.
 Aulacus, genus of insects, IX. 184.
 Aulastoma, genus of annelides, XI. 307.
 AULCESTER, town in Warwickshire, IV. 241.
 Auldearn, battle of, V. 406.
 Auldjo (Mr), his ascent of Mont Blanc, II. 628.
 AULERCI, IV. 241.
 AULIC, IV. 241.
 AULIS, in Eubœa, IV. 241; XXI. 418.
 Aulolepis, genus of fossil fishes, XII. 347.
 Auloporida, zoophytes, XXI. 1005.

AUL—AUS

Aulopus, genus of fishes, XII. 248.
 Aulostoma, genus of fishes, XII. 305—of fossil fishes, 344.
 Aulostomata, family of fossil fishes, XII. 344.
 Aulostomidae, family of fishes, XII. 305.
 AULUS GELLIUS, IV. 241; X. 446—on the distinction between annals and history, XXI. 4.
 AUMALE, town in France, IV. 241.
 — (duke d'), governor of Algeria, II. 576; X. 230.
 AUMONE, tenure in, IV. 241.
 AUNCCEL WEIGHT, IV. 241.
 AUNE, French cloth measure, IV. 241.
 AUNGERVILLE (Richard), IV. 241; XIII. 388.
 AUNIS, in France, IV. 242; X. 277.
 Aurantiaceæ, nat. order of plants, V. 185.
 AURAT, French town, IV. 242.
 AURELIA, IV. 242. See Chrysalis.
 Aurelian road, XIX. 228.
 AURELIANUS (Lucius Domitius), Roman emperor, IV. 242—reign of, XIX. 349—walls of, 362—his expedition against Palmyra, XVII. 221.
 — (CÆLIUS), physician, IV. 242.
 AURELIUS (Victor), IV. 242. See Victor.
 — Marcus Antoninus, IV. 242; III. 279.
 AUREOLA, IV. 242.
 AUREUS, Roman gold coin, IV. 242; VII. 68; XV. 433; XVI. 383.
 AURICH, in Hanover, IV. 242; XI. 211.
 Aurichalcite, mineral, XV. 103.
 Auricle of the ear, III. 45.
 Auricles of the heart, III. 63.
 Auricula, V. 203—culture of, XI. 753.
 — genus of mollusks, XV. 375.
 AURICULAR CONFESSION, IV. 242; XVIII. 336.
 Auriculidæ, family of mollusks, XV. 375.
 AURIFLAMMA, or oriflamme, standard, IV. 242.
 AURIGA, constellation, IV. 242, 79.
 AURILLAC, French town, IV. 242.
 AUROCHS, XIV. 214; IX. 387.
 AURORA, goddess, IV. 242.
 — BOREALIS, IV. 242; XIV. 683—its electrical origin, I. 738; VIII. 578—in Greenland, XI. 42—magnetic influence of, XIV. 14, 54, 55; I. 911—Dalton's views respecting its magnetism, XIV. 66, 67—in Orkney, XVI. 721—Polar regions, XVII. 584.
 AURUM CORONARIUM, IV. 250.
 — MUSIVUM, IV. 250.
 AURUNGABAD, in Hindustan, IV. 250.
 AURUNGZEBE, Mogul sovereign, IV. 250; III. 746; XI. 479—mosque of, at Benares, IV. 644.
 AUSA, lake of, II. 40.
 AUSCULTATION, IV. 250; XIII. 150, 151.
 AUSENSES, IV. 250.
 AUSONIA, IV. 251.
 AUSONIUS (Decimus Magnus), IV. 251—on fishes, XII. 239, 240, 242, 254, 256.
 AUSPEX, IV. 251. See Augur.
 AUSSERRHODEN, in Switzerland, IV. 251.
 AUSTEN (William), IV. 251.
 — (Captain Horatio), his northern expedition, XVIII. 173.
 — (Godwin), granite boulder described by, XV. 215, *n.*—on pleistocene fossil mammalia, 216.
 — (JANE), novelist, IV. 251—her novels, XIX. 279.
 AUSTER, IV. 251.
 AUSTERLITZ, IV. 251—battle of, V. 599; X. 139—Pont d'Austerlitz, XII. 581.
 Austin (Prof.), on federal government, IX. 497.
 AUSTLE (St), Cornish town, IV. 251.
 Austral islands, XVIII. 281.
 AUSTRALASIA, IV. 251—British colonies in, VII. 147—evidences of volcanic action in, XVII. 590—map of, IV. Pl. See Australia, New Holland, New Zealand, &c.
 AUSTRALIA, or New Holland, IV. 270, 252—successive explorers of, 252—258; VII. 340; X. 474, 475—general view of, IV. 258—aborigines, 258—natural history, 260—brutish condition of the

AUS—AUV

aborigines, I. 450—claims of, to self-government, V. 671, 672—emigration to, VIII. 650; XXI. 677—trade with England, VIII. 732, 733; Liverpool, XIII. 518—insects of, IX. 69—deserts of sand in the interior of, XV. 150—metallic produce of, 248—gold districts of, 232—copper mines of, 238—Mutual Provident Society of, XII. 413—fossil animals of, XVII. 174—former volcanic agency in, 590—mountains of, 600—their height, 646—rivers, 608—flora of, 629; V. 229—mammalia of, XIV. 174 *et seq.*; XVII. 631—birds, 633, 634—number of serpents, 634—prevalence of marsupial animals, both recent and fossil, 638—supplies of gold from, XVIII. 463—wages in, 467—presbyterianism in, 492—convicts in, 576 *et seq.* reptiles, XIX. 31 *et seq.*—duration of voyage from Britain to, XX. 19—timber trees of, 173; XXI. 278—weights and measures of, 810—imports of wool from, 911; prices of, 912—culture of the vine in, 882; wines of, 887—exports to, from America, 427—map of, IV. Plate.
 AUSTRALIA (South), IV. 293.
 — (WESTERN), IV. 298.
 Australian Colonies Act, XXI. 33.
 AUSTRIA, IV. 302; IX. 401—army of, III. 644—Joseph II's plan for exchanging the Austrian Netherlands for Bavaria, V. 516—designs of, against France in 1791, 540—mercantile policy of, VII. 194—value of the produce of its mines, XV. 248—crown of, XI. 335—war with France in 1809, X. 151; in 1813, 162—newspapers of, XVI. 201—heights of mountains, XVII. 642, 643—trade with France, X. 259—her Italian possessions, XII. 634; XIII. 643—wars in Italy, XII. 653 *et seq.*—annual production of coal in, VII. 126—law of copyright in her Italian states, 359—stereotyping in, XVIII. 552—work on the plants of, in nature printing, 555—registration of births, &c., in, 842—coins, XV. 441, 443—railway statistics, XVIII. 787—postal system, 424—insurance offices in, XII. 413—operations against Hungary in 1849, 24, 25—iron ores of, 541—wars with Prussia, XVIII. 652—production of the precious metals, 461, XV. 248—war with Sardinia in 1859, XIX. 643 *et seq.*—savings-banks in the German provinces of, 674—dominion in the Two Sicilies, XX. 264—silk produced in, 278—conduct of, in regard to the slave trade, 323—war with Sweden, 850—Austrian rule in Switzerland, 884—proportion of suicides in, 800—weights and measures of, XXI. 809—war with Turkey, 370—wines of, 885—universities of, 492—map of, IV. Plate.
 Autharis, Lombard king, XIII. 639; XII. 642.
 Authenticity of the Scriptures, XIX. 829.
 Authors, their copyright, VII. 355—dramatic, XXI. 172; their emoluments, *ib.*, 173.
 Autobiography, IV. 725.
 AUTOCHTHONES, IV. 320.
 AUTOCRAT, IV. 320.
 AUTO DA FE, IV. 320; II. 116; XII. 390.
 AUTOGRAPH, IV. 320.
 Autography, in lithography, XIII. 512.
 AUTOLYCUS, ancient robber, IV. 320.
 — astronomer, IV. 320; III. 789.
 AUTOMATON, IV. 320; III. 137.
 Automolite, mineral, XV. 87.
 AUTONOMY, IV. 320.
 Autos sacramentales, VIII. 145—Calderon's, VI. 72.
 AUTUMN, IV. 321.
 AUTUMNAL EQUINOX—point—signs, IV. 321.
 AUTUN, IV. 321.
 AUVERGNE, in France, IV. 321; X. 277—extinct volcanoes of, IX. 384; XVII. 589, 596—culture of the vine in, XXI. 883.

AUV—AVI

AUVERNAS, wine, IV. 321.
 AUXERRE, in France, IV. 321; XXI. 955.
 AUXESIA, IV. 321.
 AUXESIS, IV. 321.
 AUXILIARY, IV. 321.
 — VERBS, IV. 321; X. 765, 793; XIII. 189, 191.
 Auxis, genus of fishes, XII. 296.
 AUXONNE, city in France, IV. 321.
 Auzout (M.), his micrometer, XIV. 743—his pneumatic experiment, XVIII. 25—telescope made by, XXI. 119.
 AVA, capital of the Burman empire, IV. 321; V. 779 *et seq.*; XVII. 367—language of, XIII. 206—production of the precious metals, XVIII. 461—printing press at, XIII. 206.
 AVADOUTAS, sect of Indian Brahmins, IV. 322.
 AVAL, or Awal, IV. 322; III. 343.
 AVALANCHE, IV. 322—in the Alps, II. 625—in the Caucasus, VI. 341—not found among the Andes, III. 130.
 AVALLON, in France, IV. 322; XXI. 955.
 Avanturine, mineral, XV. 69.
 Avarice, not an original principle of human nature, I. 382—a vice of the Duke of Marlborough, VI. 715.
 AVATAR, IV. 322; XI. 468.
 AVATCHA, a bay, IV. 322.
 AVEBURY, village in Wilts, IV. 322—Celtic burial at, XXI. 879.
 AVEIRO, Portuguese town, IV. 322.
 AVEIRON, or Aveyron, IV. 322, 328.
 AVELLA, town of Naples, IV. 322; II. 27.
 AVELLINO, Neapolitan city, IV. 322.
 AVE-MARIA, IV. 322.
 AVENA, a genus of grasses, IV. 322—spikelet of, V. 113—flower, 125.
 AVENBRUGGER (Leopold), physician, IV. 322.
 AVENCHES, Swiss town, IV. 323.
 AVENOR, in feudal law, IV. 323.
 AVENTINUS (Johann Turmayr), IV. 323.
 — MONS, one of the seven hills of Rome, IV. 323; XIX. 356, 357.
 Aventurine felspar, XV. 71.
 AVENUE, IV. 323; XVII. 773, 775.
 AVENZOAR, Arabian physician, IV. 323; XIV. 457—his surgical skill, XX. 815.
 AVERAGE, IV. 323; XII. 423.
 Averages, determination of meteorological, XIV. 664.
 AVERNUS, now Averno, lake, IV. 327; XII. 637; XV. 779; XX. 239.
 AVERROES, Arabian philosopher, IV. 327; III. 795; XIV. 457; XV. 306; XX. 816.
 AVERRUCI DEI, IV. 328.
 AVERSA, Italian town, IV. 328.
 Aversion, XIX. 111, 112, 116.
 Aves, fossil, XVII. 154.
 AVESBURY (Robert of), IV. 328.
 AVESNES, in France, IV. 328.
 AVESTA, village in Sweden, IV. 328.
 AVEYRON, in France, IV. 328—river, XXI. 24.
 AVEZZANO, town in Naples, IV. 328.
 AVIANUS (Flavius), IV. 328.
 AVIARY, IV. 328.
 AVICENNA, Arabian physician, IV. 328; XIV. 456; XV. 306—his surgical skill, XX. 815.
 Avicula, genus of mollusks, XV. 347, 348.
 Aviculidae, family of mollusks, XV. 348—fossils, XVII. 106.
 AVIENUS (Rufus Festus), Latin poet, IV. 329.
 AVIGLIANO, town of Naples, IV. 329.
 AVIGNON, in France, IV. 329; XXI. 530—population, X. 277.
 AVILA, Spanish city and province, IV. 329.
 — (GIL GONZALEZ D'), Spanish author, IV. 329.
 AVILES (San Nicolas d'), Spanish town, IV. 329.
 Avilez (Melendez d'), founder of St Augustine, XXI. 432.
 Avis, house of, Portuguese dynasty, XVIII. 392.
 AVISON (Charles), IV. 330.
 Avisse, a blind French author, IV. 780.

AVI—AYT

AVIZ, Portuguese town, IV. 330.
 AVLONA, town in Albania, IV. 330.
 Avocets, birds, XVI. 806.
 AVOIRDUPOIS WEIGHT, IV. 330—table of, III. 584; XXI. 808—articles sold by, 807.
 AVOLA, Sicilian city, IV. 330.
 AVON, name of three English rivers:—Upper Avon, IV. 330; XVI. 297; X. 681; XXI. 738, 879—Lower Avon, IV. 330; XX. 410; XXI. 879—Avon, in Hampshire, IV. 330; XI. 203.
 AVRANCHES, in France, IV. 330.
 Avranel (Isaac), II. 46.
 Avrilly (Chanoine d'), his entomological work, IX. 21.
 Awadh, ancient city in Oude, XVII. 18.
 AWARD, in law, IV. 330.
 AWE (Loch), IV. 330; XIX. 794—trout of, III. 156, 157.
 Ax. See Acqs and Dax.
 AXAMENTA, IV. 330.
 Axan, VII. 316.
 Axayacatl, Mexican king, XIV. 702.
 AXBRIDGE, town in Somerset, IV. 330.
 AXE, IV. 330.
 — LADIES OF THE, Spanish order, XIII. 120.
 — river in Somersetshire, XX. 410.
 AXEL, Dutch town, IV. 330.
 AXHOLM, island, IV. 330.
 AXILLA, IV. 331; III. 1—axillary flowers, V. 114.
 AXIM, town in Africa, IV. 331.
 Axinite, mineral, XV. 86—its pyro-electricity, VIII. 560.
 AXINOMANCY, IV. 331.
 Axinurus, genus of fishes, XII. 304.
 Axinus, genus of mollusks, XV. 349—fossil, XVII. 105, 106.
 AXIOM, IV. 331—geometrical axioms, X. 508, 509, 517, 530; XIV. 598—logical axioms, XIII. 572, 575; XIV. 597.
 AXIS, in geometry, &c., IV. 331; 1; X. 480—in zoology, XIV. 209—in mechanics, 387, 388, 389 (see Rotation)—one of the vertebræ, III. 5—of the eye, 95; XIII. 461—of plants, V. 76, 78 *et seq.*
 AXIUS, river, IV. 331; XI. 11.
 Axle, wheel and axle, XIV. 388—hollow preferable to solid axles, XX. 778—degree of resistance of, ib.
 AXMINSTER, town in Devon, IV. 331.
 — carpets, VI. 271.
 Axolotus, genus of reptiles, XIX. 84.
 AXUM, old capital of Abyssinia, IV. 331; II. 56.
 Ay, or Ai, French town, IV. 331.
 — wines of, XXI. 883.
 AYACUCHO, plain in Peru, IV. 331; XVII. 474—battle of, IV. 819; XVII. 468.
 AYAMONTE, Spanish city, IV. 331.
 Aye-aye, animal, XIII. 791; XIV. 179—dentition of, XVI. 455.
 AYEEN-AKBERY, IV. 331.
 Aylen (Mr), his anchor, III. 119—his mode of anchoring a ship when out of soundings, 118; VI. 225.
 AYLESBURY, town in Buckinghamshire, IV. 331; II. 429—vale of, V. 722.
 AYLESFORD, village in Kent, IV. 331.
 AYLMER (John), bishop of London, IV. 331.
 AYLHAM, town in Norfolk, IV. 332.
 Aymestrey limestone, XV. 198.
 AYORA, Spanish town, IV. 332.
 AYR, town, IV. 332—river, ib.
 — NEWTON UPON, IV. 332.
 Ayres (Sir John), VI. 626.
 AYRSHIRE, IV. 332—breed of cattle, II. 342—cow, its excellence for the dairy, VII. 621—agricultural statistics, XIX. 796, 797, 798—population, 799—Cheddar system of cheese-making introduced into, XXI. 864—trigonometrical survey of, 332, 333.
 — Agricultural Association, their report on cheese-making, VII. 625.
 AYRY, or Aery, IV. 333.
 Ayscue (Sir George), IV. 333; V. 422.
 Aysgarth Force, waterfalls of, XXI. 957.
 AYTON (Sir Robert), IV. 334.

AYT—BAB

AYTON, in Berwickshire, IV. 334.
 Ayur Veda, Hindu medical work, XIV. 450.
 AZAMOR, town in Morocco, IV. 334.
 AZANI, ancient city of Phrygia, IV. 334.
 AZARA, IV. 334. See Azzara.
 AZARIAH, king of Judah, IV. 334.
 AZERBIJAN, in Persia, IV. 334.
 AZIMUTH, IV. 334; 1—use of, in the trigonometrical survey, XXI. 336.
 — CIRCLES, IV. 334.
 — COMPASS, IV. 334; XIV. 79.
 — dial, VII. 792.
 — MAGNETICAL, IV. 334.
 AZOGA SHIPS, IV. 334.
 AZOPH, IV. 334.
 — sea of, IV. 334.
 AZORES, islands, IV. 335; XVIII. 382—height of mountains in, XVII. 644.
 AZOTE, IV. 337. See Nitrogen.
 Azotized and unazotized constituents of plants, V. 94, 95.
 AZOTUS, city of Palestine, IV. 337.
 AZPEITIA, Spanish town, IV. 337.
 Azpilcueta (Martin de), III. 762.
 Aztecas, XIV. 699.
 AZTECS, IV. 337; II. 683, 684, 696—their skill in spinning cotton, XIV. 717.
 AZUNI (Domenico Alberto), IV. 337.
 AZURE, in heraldry, IV. 337; XI. 324.
 Azurite, mineral, XV. 73, 102.
 AZZARA (Don Felix de), naturalist, IV. 337; XVI. 732 and n. 2—on the vampire bat, XIV. 149.
 — (DON JOSE NICOLAS DE), IV. 337.

B

B, letter of the alphabet, IV. 338—in abbreviations, II. 17—the most frequent initial letter of English surnames, XVIII. 836.
 BAAL, IV. 338—worshipped by the Phœnicians, XX. 906.
 BAALBEC, ancient Syrian city, IV. 338—ruins of, III. 470; XX. 910.
 BAAL-BERITH, IV. 338.
 BAAL-PEOR, IV. 338.
 BAAL-ZEBUB, IV. 338.
 BABA, Cape, IV. 340.
 BABATAG, Turkish city, IV. 340.
 Babbage (Charles), his works on Life Contingencies and Assurance Institutions, III. 223—misled by a table in Morgan's work on Life Assurance, ib.—his calculating machines, I. 880—on magnetism, XIV. 10, 32, 33, 35—on the deposits of rivers, XV. 140—his calculation of life assurance, XII. 403—on the fallacy of Hume's argument on miracles, XVIII. 612.
 — (Mr), his discoveries in Australia, XXI. 315.
 BABEL, IV. 340—the confusion of tongues at, VII. 245—most likely not a confusion of language, but a dissension about religious worship, I. 466.
 BABELMANDEB, strait of, IV. 340.
 BABER, founder of the Indian Mogul or Tatar empire, IV. 340; II. 208; III. 746; XI. 478—site of his tomb, VI. 48—translation of his Memoirs by Dr Leyden, XIII. 335.
 Babinet (M.), on optics, XVI. 550, 667, 669, 692.
 BABINGTON (Gervase), bishop, IV. 340.
 — (C.), his edition of an oration of Hyperides, XII. 192.
 — (Dr), on the oil of the blood, II. 781.
 Babingtonite, mineral, XV. 82.
 Babington's conspiracy, XIX. 788.
 BABOON, IV. 340; XIV. 140, 141.
 BABRIUS, a Greek fabulist, IV. 340.
 BABYLON, IV. 340—ruins of, III. 438—history of, 741—taken by Alexander, XIII. 768—walls of, IX. 814—paintings at, XVII. 46—Jewish captivity at, XII. 767—Jewish patriarchate of, 775–76—bricks of, V. 342; XVIII. 431—school of Jewish learning at, XVII. 521—

BAB—BAC

sculpture at, XIX. 846—Rich's explorations of, 157.
 BABYLONIA, or Chaldaea, IV. 345. See Chaldaea.
 Babylonian monarchy, XI. 542; XV. 412—hours, VII. 796.
 BABYLONIAN, or astrologer, IV. 347.
 — Talmud, XXI. 15, 16.
 BABYLONICA TEXTA, IV. 347.
 Babyruza, in zoology, XIV. 197.
 BACCALAUREATE, IV. 347.
 BACCARAT, a French town, IV. 347.
 Baccha, genus of insects, IX. 239.
 BACCHÆ, priestesses of Bacchus, IV. 347.
 BACCHANALIA, festivals in honour of Bacchus, IV. 347.
 BACCHIGLIONE, river, IV. 347.
 BACCHIUS, ancient Greek author, IV. 347.
 BACCHUS, IV. 347; XVII. 3—mysteries of, XV. 753—found by Accetes, II. 95—espoused to Ariadne, III. 527—statue of, VIII. PL. CCXI.
 BACCHYLIDES, Greek poet, IV. 348.
 BACCIO, or Baccius (Andrea), physician, IV. 348.
 — DELLA PORTA (Bartolomeo), painter, IV. 348.
 BACH (J. Sebastian), musician, IV. 349; XV. 729.
 — (C. P. EMANUEL), IV. 349; XV. 729.
 — (M.), his work on insects, IX. 23.
 Bachaumont, Mémoires de, XVI. 198.
 Bache (Prof.), on the depth of the basin of the Pacific, XVII. 575.
 Bachelier (M.), on encaustic painting, VIII. 684.
 BACHELOR, IV. 349; XXI. 447 and n. 2—taxed in Rome, II. 185—number in Britain, VIII. 756—degree of bachelor, IV. 349; XXI. 448, 458 *et seq.*—knights-bachelors, IV. 349; VI. 619.
 BACHIAN, island, IV. 349.
 Bachoffner's plan for preventing smoke in grates, XX. 354.
 BACILLARIA, family of infusoria, IV. 349; III. 211; XVII. 94, 95.
 Back (Sir George), on the magnetic influence of the aurora, XIV. 15, 55, 56—his arctic expedition of discovery, XVIII. 171, 172.
 — Bay, in Trincomalle, XXI. 350.
 — how to swim on the, XX. 880—sprain of, in animals, XXI. 560.
 — of birds, III. 84.
 — pressure, in steam-engines, XX. 600, 619.
 — raking, in veterinary science, XXI. 565.
 — RENT, IV. 351.
 — STAFF, IV. 351.
 BACKER (Jacob), painter, IV. 349.
 BACKERGUNGE, in Bengal, IV. 349.
 BACKGAMMON, IV. 349.
 BACKHUYSEN (Ludolf), painter, IV. 351.
 Backmeister, on the Imperial Library of St Petersburg, XIII. 425.
 BACON (Francis), Viscount St Albans and Baron Verulam, IV. 351—his outline of the various departments of human knowledge, I. 1—his classification of the arts and sciences according to a logical division of our faculties unsatisfactory, 5, 6—his attempt at this, however, productive of great benefits, 7—his estimate of Paracelsus, 18—his merits as the father of experimental philosophy, 32—his definition of poetry, 33—the precision and accuracy of his ideas on topics connected with the philosophy of mind, ib.—on the mutual influence of thought and language on each other, 34—his sagacious views on universal grammar, ib.—his adoption of some of the prevailing prejudices of his day; among others the erroneous notion that the faculties of man are declining, as the world grows older, 35—his ethical disquisition almost entirely of a practical nature, ib.—character of his Essays, 36—on philosophical jurisprudence, ib.—his distinction between "deep and vulgar laws," 37—his notions with respect to commercial

BAC—BAC

policy specially erroneous, *ib.*—the paramount importance attached by him to the education of the people, 38—his merits failed, for a century and a half, to attract general attention, 38—his works little read in France till after the publication of D'Alembert's preliminary discourse, 56—his philosophical fame in this country may be dated from the establishment of the Royal Society of London, 241—Condorcet's estimate of his powers, 56—character of, by Ben Jonson and others, 239, 240—on human reason, 58—his admiration of the Epicurean physics, 71—analysis of his *Novum Organon*, 570 *et seq.*, 586 *et seq.*—low state of physics in his time, 570—on the causes of vagueness and sterility in all the physical sciences, *ib.*—causes of error enumerated under four heads called "Idols," 571, 572—does not charge the ancients with being absolutely regardless of experiment, 572—reduces the periods during which science had been cultivated to three, Grecian, Roman, and that of the western nations after the revival of letters, 573—considers the end and object of knowledge to have been very generally mistaken, *ib.*—reverence for antiquity has retarded the progress of science, *ib.*—common physical laws the most important for us to understand, 574—the nature of induction, *ib.*—classes all learning relatively to memory, reason, and imagination, *ib.*—distribution of knowledge under these heads, 575—his views of natural history, *ib.*—explanation of the latent process, and the latent schematism, *ib.*—method of exemplifying the process of induction relative to the form or cause of anything, 576—regarded his method as applicable to all investigations where experience is the guide, *ib.*—all facts not of equal value in the discovery of truth, 577—enumeration of twenty-seven species of facts, or *instantiæ*, with examples, *ib.*, 578 *et seq.*—quotation from, on those experiments which most immediately tend to improve art by extending science, 583—remarks on philosophical instruments, *ib.*—sagacious conjectures regarding light, which have been since verified, 584—general estimate of his genius, *ib.*—Hume's comparison between him and Galileo, 585—his superiority to Galileo as well as to all other philosophers, 586—the perfection which he ascribed to philosophy may never be attained, 590—his views on heat less intelligible than those of Aristotle, 756—his confused ideas on *aëronautics*, II. 169—on the nourishment of plants and animals, III. 179—his philosophy compared with Aristotle's, 538–39, 542, 551—treats Aristotle unjustly, 556—on the balance of power, IV. 388—on heat, XI. 260—his division of human knowledge, 536—on the compressibility of water, XII. 77—on knighthood, XIII. 110—on mnemonics, XV. 285—on the knowledge necessary to cure law of its defects, XIII. 263—on Machiavelli's Prince, 782, *n.* 5, 783—a reformer in education, XV. 809—on the topiary art, XXI. 311—his idea of a trade museum, 322.

BACON (John), founder of the British School of Sculpture, IV. 357; XIX. 867.—(Sir Nicholas), IV. 358.—(Roger), IV. 358; XIV. 458—his claim to the respect of posterity, I. 570—pursued the path of true philosophy amidst ignorance and error, 623—his diligent study of optics, *ib.*; XVI. 524—his knowledge of the use of lenses, *ib.*; XIII. 449—his fondness for the marvellous, 624—on the art of flying, II. 166—his ignorance of the denary notation, III. 581—the invention of gunpowder erroneously ascribed

BAC—BAG

to him, *ib.* *n.*; XI. 150—on astronomy, III. 796—on the calendar, VI. 82—on the rainbow, XIV. 679—his knowledge of geometry, X. 504.

BACON, curing of, VIII. 238; IX. 761, 762.

BACONTHORP (John), IV. 358.

BACTISHUA (George), physician, XIV. 456.

BACTRIA, now Bokhara, IV. 359, 395; V. 757—coins of, XVI. 390.

BACTRIS, genus of American palms, IV. 359.

Bactrites, fossil mollusks, XVII. 112.

BACULARIUS, IV. 359.

BACULE, in fortification, IV. 359.

Baculites, genus of mollusks, XV. 394; XVII. 113.

BADAJOS, IV. 359; IX. 339—siege of, V. 609, 611; IX. 825—Wellington repulsed at, XXI. 824—capture of, by Wellington, 825.

BADAKSHAN, or Buduschan, IV. 359.

BADALOCCHIO (Sisto), IV. 359.

BADALONA, Spanish town, IV. 359.

Baddley (Mr.), on the means of escape from fire, XIII. 435.—on dust-storms, XIV. 685.

BADEN (Grand Duchy of), IV. 359—army of, III. 652—coins of, XV. 443—postal system, XVIII. 424—weights and measures of, XXI. 810—universities in, 492.—or Baden-Baden, IV. 361.—a Swiss town, IV. 361.—an Austrian city, IV. 361.—WEILER, in Baden, IV. 361.

BADENOCH, IV. 361; XII. 438.

BADENS (Francis), painter, IV. 361.

Badge, XIII. 524; XI. 338.

BADGER, IV. 361; XIV. 155; XXI. 548—its power of enduring want, III. 180—dentition of, XVI. 462—its hair and fur, X. 349.

Badham (G. D.), his works on insects, IX. 22.

BADIA Y LEBLICH (Domingo), Spanish traveller, IV. 361.

BADILE (Antonio), painter, IV. 361.

Badis, genus of fishes, XII. 277.

Badister, genus of insects, IX. 94.

BADIUS (Jodocus or Josse), printer, IV. 361.

Badku, IV. 381.

BÆNA, Spanish town, IV. 361.

BÆTICA, in Spain, IV. 361; XX. 458, 459.

BÆTYLIA, IV. 361.

BÆZA, in Spain, IV. 361.—(Becerra de), painter, XVII. 75.

BAFFA, town in Cyprus, IV. 362; XVII. 261.

BAFFIN (William), navigator, IV. 362; XI. 40; XVIII. 168.

BAFFIN'S BAY, IV. 362; XVII. 576.

BAFRA, town of Asia Minor, IV. 362.

Bagarius, genus of fishes, XII. 262.

Bage (Robert), his novels, XIX. 278.

Baggesen (Jens), Danish author, XIX. 694.

BAGHDAD, IV. 362—cultivation of science at, under Almanun and the Abbassides, II. 597, 755; III. 794—the khalifs of, 743.—a Turkish pashalic, IV. 364.

Bagheleund, Indian state, XIX. 100.

BAGHERMI, African country, IV. 364; II. 229—partially explored by Dr Barth, X. 478.

BAGLIVI (Giorgio), Italian physician, IV. 364.

BAGMUTTY, river, IV. 364, 367.

BAGNARA, Neapolitan city, IV. 364.

BAGNERES-DE-BIGORRE, in France, IV. 364.—DE-LUCHON, in France, IV. 365.

Bagnes, places for convicts in France, XVIII. 575—at Brest, V. 316; Toulon, XXI. 317.

Bag-nets, for fishing, IX. 617, 610, 627.

BAGNOLES, French village, IV. 365.

BAGNOLS, French town, IV. 365.

Bagous, genus of insects, IX. 140.

BAGPIPE, IV. 365; XVII. 714.

Bagrati (Prince), X. 154, 155, 157.

Bagratiomite, mineral, XV. 90.

Bagrus, genus of fishes, XII. 261.

Bagshot cocene rocks, XV. 212.

Bagster's Polyglot Bible, XVIII. 266.

BAG—BAI

Bagtchi-Serai, in the Crimea, VII. 505.

BAHAMAS, or Lucayas, islands, IV. 365; XXI. 837.

BAHAR, in Hindustan, IV. 367, 651.

BAHAWULPOOR, in Northern India, IV. 367.

BAHIA, province, IV. 367; V. 287—climate of, 293—population, 295.—town, foundation of, V. 281—taken by the Dutch, 282—commerce of, 299.

BAHIR, IV. 367.

Bahrâich, town in Oude, XVII. 18.

BAHREIN, islands, IV. 367—pearl fishery of, XVII. 357, 444.—province of Arabia, III. 341, 343.

Bahr-el-Abyad. See Abiad, Bahr el.

Bahr-el-Azrek, II. 55, 214; V. 689; XVI. 269; XVII. 607; XX. 51.

Bahr-es-Saffi, sand gulfs of, III. 357–8.

Bahr-Yoosuf, canal, VIII. 430.

BALE, in Italy, IV. 368; XX. 240.

BAIBOUT, Turkish town, IV. 368.

BAIER, or Bayer (Gottlieb Siegfried), IV. 368.

BAIKAL, lake, IV. 368; XIX. 549.

BAIL, in law, IV. 368.

BAILÉN, Spanish town, IV. 368.

BAILEY (Nathan), IV. 368.—on syllogisms, XIII. 624.—(Rev. R. R.), on the operation of the poor-laws, XVIII. 313, *n.* 1.

BAILIE, IV. 368.

BAILIFF, IV. 368.

BAILLI, or Bailly (David), painter, IV. 368.

BAILLIWICK, IV. 369.

Baillarger (M.), on epilepsy, XIV. 536.

BAILLET (Adrien), IV. 369—on pseudonymous books, 711.

BAILLEUL, ancient French town, IV. 369.

Baillie (Colonel), XI. 492.—(JOANNA), IV. 369—as a dramatist, VIII. 168.—(General), defeated by Montrose, V. 406.—(Dr MATTHEW), IV. 369.—(ROBERT), IV. 370.

BAILLY (Jean Sylvain), IV. 373—his estimate of Leibnitz's philosophical character, I. 262—his views on the antiquity of Indian astronomy, II. 488; III. 786—his eulogium on Clairaut, I. 783—on mesmerism, XX. 419.

BAILMENT, IV. 375.

BAILY (Francis), IV. 375; I. 852—founder of the Astronomical Society, *ib.*—his writings on eclipses, *ib.*—his star-catalogues, *ib.*; IV. 95—his astronomical papers, III. 816—on the motions of the fixed stars, IV. 83—on the pendulum, I. 852; IX. 573—his repetition of Cavendish's experiment on the earth's density, I. 835, 853—results obtained by him as to the earth's oblateness, 853—on life annuities and assurances, III. 222; XII. 400.

Bain (A. G.), fossil reptiles discovered by, XVII. 142, 143.—(Mr), his electric telegraph, VIII. 544; I. 986; XXI. 101, 106—his receiving instrument, 107—transmitting apparatus, *ib.*—his electric clock, I. 986; XXI. 644.

BAINBRIDGE (Dr John), IV. 375.—(Mr), on angling, III. 150 *et seq.*—his Fly-Fisher's Guide, 164.

Baines (Edward), XVI. 186; XXI. 958—his estimate of the production of wool in United Kingdom, 907—his estimate of the woollen manufactures, 918—his report on the rate of wages in the Leeds woollen district, 919.

BAIOLENSIANS, sect of heretics, IV. 375.

Bairacter (Mustapha), XXI. 372, 373.

BAIRAM, Mahometan feast, IV. 375.

BAIRD (Sir David), IV. 375; XXI. 818, 821—Cape of Good Hope taken by, X. 712.—(Dr), on the medusæ, XXI. 998—on physalæ, 999.

BAIREUTH, in Bavaria, IV. 376.

BAIROUT, or Beyrout, Syrian town, IV. 376, 691.

Bait-fishing, III. 148—for trout, 155—for pike, 159.

BAI—BAL

BAITING, IV. 376.

BAIZE, IV. 376.

Bajarzid, Turkish city, IV. 523.

BAJAZET I., sultan of the Turks, IV. 376; VII. 320; XXI. 368—defeat and treatment of, by Timur, XXI. 283.—II., sultan, IV. 376—his reign, XXI. 369.

Bajee Rao, prince of Poonah, XI. 507.

BAJULUS, IV. 376.

Bakel, forts on the Senegal, XX. 49.

BAKER, IV. 376—diseases of bakers, XIV. 443—number in London, XIII. 660.—(HENRY), IV. 376—on animalcules, III. 199, 202—on the stickleback, XII. 281.—(Sir RICHARD), IV. 377.—(THOMAS), mathematician, IV. 377.—(THOMAS), antiquary, IV. 377.—(Mr), on the number of mill operatives in Leeds, XIII. 313—on the statistics of Leeds' woollen manufacture, XXI. 919.

BAKEWELL (Robert), agriculturist, IV. 377; XIII. 320—his improvement of live stock, II. 263—produced the Leicester breed of sheep, 345; XIII. 320.—(Mr), his travels in the Tarentaise, XIX. 587.—town in Derbyshire, IV. 377—chalybeate spring at, VII. 755.

Bakewellia, fossil mollusks, XVII. 106.

BAKING, IV. 378—of pottery, XVIII. 441—of meat, IX. 766—of timber, XXI. 279.

Bak-thian, Chinese city, VI. 49.

BAKU, or Badku, IV. 381.

BALA, town in Wales, IV. 382; XIV. 544—lake of, 543—Cambro-silurian rocks of, XV. 196.

BALAAM, IV. 382.

BALADAN, IV. 382.

BALÆNA, IV. 382; XIV. 233. See Whale.

Balenodon, fossil whales, XVII. 165.

Balanoptera, jaw and baleen-plates of, XVI. 442.

BALAGHAUT DISTRICTS, IV. 382.

Balagny, VI. 626.

BALAGUER, Spanish city, IV. 382.

Balaklava, in the Crimea, VII. 505; IV. 744—battle of, XIX. 504.

BALAMBANGAN, island, IV. 382.

BALANCE, IV. 382; XIV. 415; XX. 541—Chinese, IV. 385—Danish, *ib.*—bent lever, *ib.*—hydrostatic, 386—of torsion, *ib.*; VIII. 549; I. 835, 873, 988—statistical, IV. 452—electrical, VIII. 624—magnetic, XIV. 43.—in watch-work, VII. 29—compensated balances, *ib.*—Dent's compensation, 31—Loseby's mercurial, *ib.*—Dent's prismatic, *ib.*—Eiffe's compensation, 30.—OF POWER, IV. 387; V. 538, 586.—Mr Fox on, 526.—of trade, IV. 392; XVIII. 214.—of a constitution, VIII. 384.—sheet, in book-keeping, V. 27.

Balanidae, fossil, XVII. 101.

Balaninus, genus of insects, IX. 140.

Balanophoraceæ, nat. order of plants, V. 209.

Balanus, genus of cirripedes, XV. 319.

BALAS RUBY, IV. 392; XV. 87.

BALASINORE, town in Western India, IV. 392.

Balaçon handkerchiefs, manufacture of, VII. 449.

BALASORE, town in Hindustan, IV. 392.

BALATON LAKE, IV. 393; XII. 10—peculiar fish of, 17.

BALBI (Adrian), geographer, IV. 393.

BALBOA (Vasco Nuñez de), IV. 393; X. 472; XVII. 462.

BALBRIGGAN, Irish sea-port, IV. 393; VIII. 214, 216.

Balcarce (General), IV. 832.

Balconies, III. 488.

Bald (William), on the use of diving bells in the Clyde, XVI. 70—on the weight of deposits from the bed of the Clyde, 85.

BALDI (Bernardino), IV. 393.

BAL—BAL

BALDINGER (Ernst Gotfried), IV. 393.
 BALDINUCCI (Filippo), IV. 393.
 Baldo (Guido), XX. 30. See Ubaldi.
 BALDOCK, town in Hertford, IV. 393.
 — (RALPH DE), bishop, IV. 393.
 Baldoon, in Wigtownshire, XXI. 863, 864.
 BALDRICK, IV. 393.
 BALDWIN (Thomas), archbishop of Canterbury, IV. 393.
 — the name of nine counts of Flanders, IV. 394.
 — emperor of the East, VII. 318, 526.
 — kings of Palestine, XVII. 196.
 BALE (John), bishop of Ossory, IV. 394; XXI. 165—his commendation of Bellen-den, IV. 635—on libraries, XIII. 389.
 BALEARIC ISLANDS, IV. 394; XIV. 102.
 BALECHOU (Jean Jacques Nicolas), IV. 394.
 BALEN (Hendrick Van), painter, IV. 394.
 BALES (Peter), IV. 394.
 BALEY (Walter), physician, IV. 394.
 BALFOUR (Sir James), president of the Court of Session, IV. 394; XX. 313.
 — (Sir James), IV. 394—his MSS., XIII. 401.
 — (ROBERT), IV. 395.
 — (Prof.), on the number of plants, XVII. 625—on the equatorial zone of vegetation, 626—on the botany of Scotland, XIX. 811, 795.
 BALFROOSH, Persian town, IV. 395.
 BALGUY (John and Thomas), IV. 395.
 BALHARRY, in Hindustan, IV. 395.
 BALI, or Bally, one of the Sunda islands, IV. 395.
 Balinger, kind of vessel, XX. 123.
 BALIOL, or Balliol (Sir John de), IV. 395.
 Balistapus, genus of fishes, XII. 313.
 Balistes, genus of fishes, XII. 312, 313—teeth of, XVI. 421, 422.
 Balistidae, family of fishes, XII. 313.
 Balitora, genus of fishes, XII. 258.
 BALIZE, IV. 395; XI. 609.
 BALK, or Balkh, IV. 395.
 — ruins of, IV. 396.
 BALKAN, mountains, IV. 396; IX. 383; XVII. 596; XXI. 376, 377—height of, XVII. 642.
 — gulf of, VI. 311.
 Ball, printers, XVIII. 546, 547.
 — (Mr), on the soil and situations fitted for the tea-plant, XXI. 84—on tea, 86 *et seq.*
 BALLAD, IV. 396—Spanish, XVIII. 112; XX. 494—ballad poetry of Scandinavia, XIX. 691.
 Ballaghkeen (North and South), baronies in Wexford, XXI. 846.
 Ballanophyllia, fossil corals, XVII. 97.
 Ballantyne (James and John), their connection with Sir Walter Scott, XIX. 821, 822.
 Ballantyne's salve for sheep, II. 351.
 Ballarat, gold diggings at, IV. 289—largest mass of native gold yet found at, XVII. 622.
 Ballard (Mr), on the flow of water over weirs, XII. 121, 125.
 BALLAST, IV. 397.
 BALLATER, village in Aberdeenshire, IV. 397.
 BALLENDEN (John), IV. 397. See Bellenden.
 BALLESTEDT, IV. 397.
 BALLET, IV. 397; VII. 646.
 BALLINA, town in Ireland, IV. 398; XIV. 372.
 Ballinacor (North and South), baronies in Wicklow, XXI. 859.
 BALLINAHINCH, in Ireland, IV. 398—mineral waters near, VIII. 122.
 BALLINASLOE, Irish town, IV. 398—its cattle fair, XII. 519; X. 391; IX. 468; XIX. 422.
 BALLINROBE, Irish town, IV. 398; XIV. 372.
 Balliol (John), XIX. 754.
 — College, Oxford, XVII. 35; XXI. 459.
 BALLISTA, military engine, IV. 398.
 BALLISTEA, IV. 398.
 BALLISTIC PENDULUM, IV. 398; XI. 111.
 BALLISTRARIA, IV. 399.

BAL—BAM

Ballium of a castle, VI. 327.
 Ballochmyle viaduct, over the river Ayr, XVIII. 763, 764.
 BALLOON, IV. 399—ascend of Biot and Gay-Lussac, I. 939—invention of, by the Montgolfiers, II. 173—first public ascent of a, 174—useful purposes for which balloons may be employed, 184—true theory of, 170—buoyant force of, *ib.*—celerity of their ascent, 171—stability of their suspension at a given height, 172—employed in war, X. 93, *n.* 2; II. 180; XI. 165—smoke balloons, II. 171—72—gases best fitted for, VI. 458—ascents of Messrs Green, Rush, and Welsh, XIV. 640—observations on the decrease of atmospheric temperature derived from balloon ascents, 642.
 — chemical vessel, IV. 399.
 — kind of game, IV. 399.
 BALLOT, IV. 399—its successful operation in Tasmania, XXI. 33.
 BALLSTON, town in New York, IV. 400.
 BALLYBAY, Irish town, IV. 400.
 BALLYCASTLE, Irish town, IV. 400.
 BALLYMENA, Irish town, IV. 400.
 BALLYMONEY, Irish village, IV. 400.
 Ballymore, in Ireland, moat at, XXI. 840.
 Ballynahinch, river and lake, X. 389.
 BALLYSHANNON, Irish town, IV. 400; VIII. 103.
 Ballyspellan, mineral spring at, XIII. 85.
 BALM OF GILEAD, IV. 400.
 — of Mecca, IV. 401.
 — tree of Arabia, III. 344.
 — of Gilead fir, V. 209.
 Balma (Jacques), ascent of Mont Blanc by, II. 627.
 BALMERINO, in Fife, IV. 402.
 BALMEZ (Jayme Lucien), IV. 402.
 BALMORAL, residence of the queen in Aberdeenshire, IV. 402; II. 34.
 BALNAVES (Henry), IV. 402.
 BALNEARI SERVII, IV. 402.
 BALOGNES, IV. 402. See Valonges.
 BALSAM, IV. 402—of Copaiva, V. 190; VII. 345—of Umiri, V. 187—of Peru, 190—of Tolu, *ib.*—of Jericho, XVII. 187.
 Balsamiflua, nat. order of plants, V. 207.
 BALSAMINEAE, or Balsaminaceae, nat. order of plants, IV. 402; V. 188.
 Balsamo (Joseph), impostor, VI. 59.
 BALSAMODENDRON, genus of plants, IV. 402; V. 190.
 Balsham (Hugh), founder of St Peter's College, Cambridge, XXI. 461, 465.
 Balsora. See Bussora.
 BALSOVER, or Bolsover, IV. 402, 839.
 BALTA, Russian town, IV. 402.
 BALTIC SEA, IV. 402; IX. 385; XVIII. 662—specific gravity of its water, XVII. 573.
 BALTIMORE, in Ireland, IV. 404.
 — in Maryland, IV. 404; XIV. 331—attempt of the British on, in 1814, V. 617—suicides in, XX. 800—temperature at, XXI. 421.
 BALTINGLASS, Irish town, IV. 405; XXI. 859.
 BALUE (Jean), IV. 405.
 BALUSTER, IV. 405; III. 489, 507.
 BALUSTRADE, IV. 405; III. 479.
 BALUZE (Etienne), IV. 405—his collection of capitularies, VI. 221.
 BALZAC (Honoré), French novelist, IV. 406.
 — (JEAN-LOUIS-GUEZ DE), IV. 406.
 BAMBA, in Africa, IV. 406.
 BAMBARA, African country, IV. 406; II. 228.
 BAMBERG, town of Bavaria, IV. 406—early printing at, XVIII. 532.
 BAMBOCCIO, painter, IV. 406.
 BAMBOO, IV. 406; V. 216—its cells, 66—paper made from, XVII. 249—used as an instrument of punishment in China, VI. 564; and in Cochinchina, VII. 49—abundance of silica in, V. 97.
 BAMBOROUGH, village in Northumberland, IV. 408—castle, XVI. 300.
 BAMBOUK, African country, IV. 408; XX. 51.
 Bambridge, prison-keeper, XVIII. 567, 568.

BAM—BAN

BAMITAN, in Afghanistan, IV. 408.
 Bamlite, mineral, XV. 86.
 BAMPTON, town in Oxfordshire, IV. 408—in Devonshire, *ib.*
 BAN, or Banus, IV. 408.
 — or Bann, IV. 408.
 BANAGHER, Irish town, IV. 408.
 BANALUFAR, town in Majorca, IV. 408.
 BANANA, IV. 408; V. 79, 84, 294, 211—fibre of, XXI. 783—in Mexico, XIV. 716.
 — order of plants, V. 211.
 Banas, or Bunass, river in Gujerat, XI. 91.
 BANAT, in Hungary, IV. 408; XII. 10.
 BANBRIDGE, Irish town, IV. 409.
 BANBURY, town in Oxfordshire, IV. 409.
 — bridge, XII. 600.
 BANCA, island, IV. 409; XX. 803—tin mines of, XV. 240.
 — Strait of, XX. 803.
 Bancalari (M.), his discovery of the diamagnetism of flames, I. 981.
 Banchus, genus of insects, IX. 191.
 BANCOORA, town in Hindustan, IV. 409.
 Bancroft on the art of dyeing, VIII. 274, 277 *et seq.*
 — (Archbishop), library founded by, XIII. 395.
 Band, in architecture, III. 507.
 BANDA, in Hindustan, IV. 409.
 — ISLANDS, IV. 409.
 — ORIENTAL, IV. 410. See Uruguay.
 BANDALEER, IV. 410.
 BANDANNA, IV. 410—handkerchiefs, manufacture of, VII. 449.
 BANDELLO (Matteo), Italian novelist, IV. 410—his romances, XIX. 284.
 BANDINELLI (Baccio), sculptor, IV. 411; XIX. 863.
 BANDINI (Angelo Maria), IV. 411—on political economy, XVIII. 220.
 BANDITTI, IV. 411.
 BANDON, Irish town, IV. 412.
 — river, VII. 371.
 BANDORE, IV. 412.
 BANDROL, IV. 412.
 BANDUSLE FONS, IV. 412.
 BANE, IV. 412.
 — (Donald), XIX. 749.
 BANFF, town, IV. 412—herrings, IX. 639.
 BANFFSHIRE, IV. 412—agricultural statistics, XIX. 796, 797, 798—population, 799.
 BANG, or Banga, IV. 413; XX. 804.
 BANGALORE, in Hindustan, IV. 413—stormed by Lord Cornwallis, V. 541.
 BANGKOK, in Siam, IV. 413; XX. 232, 233, 234.
 BANGOR, in Wales, IV. 414—in Ireland, *ib.*—in Maine, *ib.*; XIV. 98.
 BANGOR-YS-COED, in Flintshire, IV. 414.
 BANGORIAN CONTROVERSY, IV. 414; XI. 549—Butlers' supposed share in, VI. 29.
 BANG-PA-SOE, in Siam, IV. 414.
 BANGUEY, island, IV. 414.
 BANIAR, island, IV. 414.
 BANIAN, IV. 414.
 — or Banyan tree, IV. 414; V. 77, 206; IX. 536.
 BANIAS, town in Palestine, IV. 414.
 BANIER (Antoine), IV. 414.
 BANISTER (John), IV. 414.
 — (Capt.), his explorations in Australia, IV. 255.
 BANJARMASSIN, in Borneo, IV. 415; V. 47.
 BANK, IV. 415—of Venice, XV. 488—Amsterdam, *ib.*—Hamburg, 489—Royal Bank of Scotland, 484—British Linen Co., *ib.*—of Bengal, VI. 70—of Athens, XI. 17—Western Bank of Scotland, XV. 468; its bankruptcy, 486—City of Glasgow, 486 and *n.* See Banks, Banking.
 — of England, XIII. 663; XV. 455, founder of the, XVII. 340—its charter, XV. 455; renewals of, 457—crises of 1745, 1780, 1797, 456—letter from its directors to the government in 1857, 468, *n.*—mode of printing its notes, VIII. 810, *n.* 2—Bramah's machine for numbering and dating its notes, V. 274—its difficulties in 1796 and 1797, 559, 561—acts of Parliament

BAN—BAN

respecting, in 1826, 645—renewal of its charter in 1764, 469—act of 1844, 462; its suspension in 1847 and 1857, 467—the only importer of gold bullion, VII. 84—importation of gold by, 85—management of, XV. 470—its connection with the government, 470, 473—tabular view of the issues, securities, bullion, &c., of, 475 *et seq.*
 Bank of France, X. 262; XV. 489.
 — of Ireland, VIII. 226; XV. 488.
 — of Scotland, XV. 483—constitution and objects of, 484.
 — notes, XV. 426, 446; VII. 489, 200—numbering and dating of, V. 274—suppression of small notes in England, 644—their influence on commerce, VII. 189, 199, 200—when they first became general in England, 189—depreciation of their value, 199, 200; XV. 428—steel-engraving of, VIII. 809—distinction between them and bills of exchange, XV. 446—their conversion into coin, 447, 448, 449—issued by the Bank of England monthly, 478, 479; by private banks in England and Wales, 482; by the bank of France, 490—expediency of suppressing L1 notes, 487—printing of, XVIII. 557; VIII. 810, *n.* 2.
 BANKER, IV. 415—act of 1857 against fraudulent returns by bankers, XV. 449—advantages afforded by, 450—bankers of Greece and Rome, 454.
 BANKING, IV. 415—Irish, XII. 527; XV. 487—in the United States, 491—application of limited liability to, XVII. 323; its disadvantages, XV. 452—in Prussia, XVIII. 671—Spain, XX. 491—a branch of statistics, 550. See Bank, Banks, Credit, Exchange.
 — See Embankment.
 Bankiva cock, XVI. 789.
 BANKRUPTCY, IV. 415—Lord Brougham's Act on, 417—Irish system of, *ib.*—Scotch, *ib.*—puts an end to the indentures of apprentices, XIV. 346—old Roman law against bankrupts, VI. 740—a disqualification for sitting in the House of Commons, XVII. 295—origin of the name, II. 7.
 Banks—in London, XIII. 662—Glasgow, X. 655—Edinburgh, VIII. 403—Irish, XII. 529; XV. 488—Scotch, 483, 485, 486—in Canada, VI. 155—United States, XXI. 427, 441—Toronto, 314—New York, XVI. 228; their condition in 1857, *ib.* 229—in Portugal, XVIII. 398—numerous failures of, in 1825, V. 643; XV. 460; in 1814–15–16, 460—Bank Restriction Act, II. 263—their tendency to encourage gambling and overtrading, XV. 451.
 — private, XV. 459—notes issued by, 482.
 — joint-stock, XV. 459, 448—measures for establishing, in 1826, 461—progress of the system, *ib.*—list of, in England and Wales, 480, 481.
 — of deposit and issue, XV. 450, 454.
 — Savings. See Savings Banks.
 — (JOHN), dramatist, IV. 418.
 — (SIR JOSEPH), IV. 418—his observations on a spider, III. 375—catalogue of his library, IV. 714; VIII. 201—accompanies Captain Cook, VII. 340—on luminous crustacea, 539.
 — (THOMAS), sculptor, IV. 421; XIX. 867.
 BANKS'S ISLAND, IV. 421.
 BANN, river in Ireland, IV. 421; III. 284; XII. 505; VIII. 122; XXI. 845—fisheries of, IX. 626.
 Bannatyne, port, in Bute, VI. 26.
 — MSS., XIII. 401.
 — Club, XXI. 414.
 BANNER, IV. 421—armorial insignia borne on banners, XI. 322.
 BANNERETS, knights, IV. 421; VI. 621.
 BANNISTER (John), comedian, IV. 421.
 BANNOCKBURN, IV. 421—defeat of Edward II. at, VIII. 681; XIX. 756.
 Bannow, Irish river, XXI. 845.
 BANQUETING room or house, IV. 421.

BAN—BAR

Banquette, IX. 819.
 BANTAM, town in Java, IV. 422.
 BANTRY, Irish seaport, IV. 422—barony of, XXI. 846.
 — Bay, IV. 422; VII. 371—general Hoche's arrival at, X. 104.
 BAOBAB tree, IV. 422; V. 184; II. 226; XVII. 626. See *Adansonia*.
 BAPAUME, French town, IV. 422.
 Baphetes, genus of fossil reptiles, XVII. 136.
 BAPHOMET, IV. 422.
 BAPTISM, IV. 422; XXI. 219—by fire, IV. 425—of the dead, 426—hypothetical, ib.—Solemn, and lay, ib.—of bells, &c., ib.—one of the religious rites instituted by Christ himself, I. 482—catechumens, or candidates for, VI. 333—of children by Roman Catholic missionaries, XV. 276—registration of, XVIII. 831—how regarded by quakers, 716—Robinson's History of, XIX. 237. See Baptists, Anabaptists.
 BAPTISMAL VOW, IV. 426—Presents, ib.
 BAPTISTE, or Jean Baptiste Monnoyer, painter, IV. 426.
 BAPTISTERY, IV. 427.
 BAPTISTS, IV. 426; II. 741—number of their places of worship in England and Wales, VIII. 743; in Scotland, XIX. 801.
 BAR, in courts of justice, IV. 427.
 — in heraldry, IV. 427; XI. 328.
 — in music, IV. 427.
 — in rivers, IV. 427; XVII. 585; XIX. 215—how formed, XI. 225—theories on their formation, XVI. 80—conditions under which formed, ib.
 — confederacy of, XVIII. 146.
 — a Turkish town, III. 278.
 BAR-LE-DUC, French town, IV. 427.
 BAR-SUR-AUBE, in France, IV. 428.
 BAR-SUR-SEINE, in France, IV. 428.
 BARA, a festival, IV. 428.
 BARABA, in Siberia, IV. 428.
 BARABRA, African people, II. 219.
 BARACOA, in Cuba, IV. 428.
 BARAHAT, in Hindustan, IV. 428.
 BARALIPTON, in logic, IV. 428.
 BARANGI, IV. 428.
 BARANYA, in Hungary, IV. 428.
 BARANZANO, philosopher, IV. 428.
 BARATARIA, island, IV. 428.
 BARATHRUM, IV. 428.
 BARATHIERE (John Philip), IV. 428.
 BARBACAN, IV. 429; VI. 327.
 BARBACOUS, birds, XVI. 778.
 BARBADOES, IV. 429—sugars of, XX. 795.
 BARBARA, IV. 431.
 BARBARELLI (Giorgio.) See Giorgione.
 BARBARIAN, IV. 431.
 Barbarin (Chev. de), his spiritual school of magnetism, XX. 423.
 BARBARISM, IV. 431.
 Barbaro on architecture, III. 451.
 BARBAROSSA, IV. 431; II. 567.
 BARBARY, IV. 431; II. 223; XXI. 380—dynasty of the Almohedes, II. 601—wars with Spain and Portugal, 619—French trade with, X. 259—slavery in, XX. 321.
 BARBASTRO, a Spanish city, IV. 431.
 BARBATELLI (Bernardino), IV. 431.
 BARBATIO, VII. 305.
 BARBAULD (Anna Letitia), IV. 431; II. 428—on the poetry of Collins, VII. 129—on Richardson's novels, XIX. 159.
 BARBE, IV. 432.
 Barbel, fish, angling for, III. 161.
 Barbels in fishes, XII. 221.
 BARBER, IV. 432—origin of barber's pole, III. 324.
 — surgeons, III. 114; VIII. 223.
 BARBERINI VASE, IV. 432. See Portland vase.
 — library, XIII. 412.
 BARBERINO (Francesco da), IV. 432.
 — town in Tuscany, IV. 432.
 BARBERRY, plant, IV. 432, 660; V. 153, 181, 128—embryo in the seed of, 76. See *Berberis*.
 — order of plants, V. 181.
 BARBEYRAC (Jean), IV. 432—his transla-

BAR—BAR

tion of Cumberland's work, *De Legibus Naturæ*, VII. 580.
 BARBEZIEUX, in France, IV. 432.
 Barbican, IV. 429.
 Barbicans, birds, XVI. 779.
 Barbicornis, genus of insects, IX. 208.
 Barbier (M.), on anonymous books, IV. 712; III. 257.
 BARBIERI (Giovanni Francesco), IV. 432; XVII. 73.
 — (PAOLO ANTONIO), IV. 432.
 BARBITOS, IV. 432.
 Barbon (Nicholas), on political economy, XVIII. 219.
 Barboteau on ants, III. 261.
 BARBOUR (John), IV. 432—his poetry, IX. 796.
 BARBUDA island, IV. 436.
 Barbus, genus of fishes, XII. 257.
 Barbut (James), his work on insects, IX. 7.
 BARCA, in Africa, IV. 437; VII. 610; XXI. 352, 353.
 — Soranus, IX. 578.
 BARCAROLLE, IV. 437.
 BARCELONA, in Spain, IV. 437; VI. 331; XX. 467—taken by the Earl of Peterborough, V. 449—counts of, XX. 462.
 — New, in Venezuela, IV. 437.
 BARCLAY (Alex.), English poet, IV. 437.
 — (JOHN), IV. 439.
 — (JOHN), M.D., anatomist, IV. 442—on ancient opinions concerning the soul, III. 310.
 — (ROBERT), quaker, IV. 442.
 — (WILLIAM), M.D., IV. 438.
 — (WILLIAM), LL.D., IV. 439.
 — de Tolly, Russian commander, X. 154, 155.
 BAR-COCHEBAS, or Bar-cohab, IV. 443; XII. 734, 775; XVII. 195.
 BARD, IV. 443—bards of ancient Germany, X. 574—northern, XIX. 264.
 BARDAS, IV. 443, 486.
 BARDESANES, IV. 443; X. 689—his imitation of the psalms of David, XII. 189.
 BARDILI (Christoph Gottfried), IV. 443.
 BARDSEY, island, IV. 444.
 Bardylis, the Illyrian, XII. 364.
 Barebone's parliament, V. 416.
 BAREGES, French town, IV. 444.
 BAREILLY, city in Hindustan, IV. 444—sepoily insurrection at, XVI. 309.
 Barentz (William), his voyage of discovery, XVIII. 165.
 BARETTI (Giuseppe), IV. 444.
 Barettier (John Philip), IV. 428.
 Barff (John), on wool, II. 353.
 BARFLEUR, French town, IV. 444.
 Barelle (Bayle), his works on insects, IX. 11.
 BARGE, IV. 444, 800; XX. 123.
 Bargy, barony in Wexford, XXI. 846.
 BARI, Terra di, IV. 444.
 — Neapolitan town, IV. 444; XX. 242.
 Baridius, genus of insects, IX. 140.
 BARILLA, IV. 444.
 Barium, VI. 486.
 BARK of trees, IV. 444; V. 82; XXI. 267—effect of marshy soils on, 269—oak-bark, 273; its use in tanning, XIII. 306—paper made from, XVII. 249.
 — (Peruvian.) See Cinchona.
 — in navigation, IV. 445.
 BARKER (Robert), IV. 445.
 — (Thomas), on salmon-roe as a bait, III. 156—his book on the art of angling, 163.
 BARKER'S MILL, IV. 445; XII. 172; XI. 356; I. 889.
 BARKING, town in Essex, IV. 445.
 Barkly (Sir Henry), governor of Jamaica, XII. 675-76.
 Barkometer, XIII. 306.
 Barlaam on sexagesimals, III. 578.
 BARLEUS (Gaspar), IV. 445.
 Bar-lathes, XXI. 390.
 BARLETTA, Neapolitan seaport, IV. 445.
 BARLEY, IV. 445; II. 379, 384, 386, 417; IX. 769; V. 320; XVII. 630—culture and varieties of, II. 310—analysis of, V. 324—brewing from, 320—species of, ib.—qualities of the different varie-

BAR—BAR

ties, ib.—Dr Ure's analysis of, 324—malting of, 321—inorganic constituents of, 96—its use in distillation, VIII. 48. See Corn-Laws.
 Barley hummeller, II. 282.
 — CORN, a measure, IV. 445.
 — sugar, XX. 795, 797.
 Barlocci (Saverio), on the electricity of the solar rays, VIII. 569; XIV. 13—on solar magnetism, XVI. 596.
 BARLOW (Francis), painter, IV. 445.
 — (JOEL), IV. 445.
 — (P. W.), his cast-iron sleepers, XVIII. 758—his rail, ib.
 — (THOMAS), bishop, IV. 446.
 — (WILLIAM), bishop, IV. 446.
 — (WILLIAM), mathematician and divine, IV. 446.
 — (W. H.), on the strength of beams, XII. 591.
 — (Prof.), his contrivance to counteract the local attraction of the needle on ship-board, I. 745, 990; XIV. 9, 90; XX. 27—on magnetism, XIV. 10, 33, 34, 35, 36, 39, 40, 49, 50, 51, 52, 53 *et seq.*—his electro-magnetic globe, 65—his method of magnetizing bars, 73—his essay on the strength of timber, XX. 717—on the strength of beams, I. 876—cohesive strength of timber, XX. 171—strength of materials, 748—his telescope, XXI. 123—his lens, ib.
 BARM, IV. 446. See Yeast.
 BARMEN, town in Prussia, IV. 446.
 Bar Moor, in Derbyshire, intermitting spring at, VII. 755.
 BARMOUTH, Welsh town, IV. 446.
 BARN, IV. 742. See Varna.
 BARNABAS (St), IV. 446; IX. 490; XVII. 346, 347—epistle of, IV. 446—gospel, ib.
 BARNABITES, IV. 446.
 Barnaby Googe, his work on agriculture, II. 256.
 Barnack oolite, as a building-stone, XX. 712.
 BARNACLE, IV. 446—Scaliger's notice of Boyce's story concerning, V. 254, n. 4—fossil, XVII. 101.
 BARNACLES, in farriery, IV. 446.
 BARNARD-CASTLE, town in Durham, IV. 446; VIII. 267.
 Barnard (Wm. Henry), his discovery of caoutchoucine, VI. 204.
 — (General Sir H.), XVI. 303.
 Barnard's Inn, XII. 385.
 BARNIAUL, in Siberia, IV. 447—meteorological observations at, XIV. 687.
 BARNES (Joshua), IV. 447.
 BARNET, town in Hertford, IV. 447—battle of, VIII. 692.
 BARNEVELDT (Jan d'Olden), IV. 447; XI. 573.
 BARNSELY, town in Yorkshire, IV. 447.
 BARNSTAPLE, in Devonshire, IV. 447.
 — in Massachusetts, IV. 447.
 BARO, or Baron (Peter), IV. 447.
 BAROCCHIO (G. da Vignola), architect, IV. 447.
 BAROCCI (Frederigo), painter, IV. 447.
 BAROCO, IV. 447.
 BAROMETER, IV. 448—first applied to measure the heights of mountains by Mariotte, I. 658—further improvements by Bouguer, De Luc, &c., 730—rule of modern practice, ib.—height of, in connection with atmospherical refraction, IV. 148—mountain, 465—portable, 466—method of computing the depression of the mercury in, VI. 216—its periodic fluctuations, XIV. 667—horary variations of, VI. 775—diurnal and annual variations of, 773, 774; XIV. 667, 668, 670—barometric pressure, 639, 666—barometric fogs, 654—Pascal on the suspension of mercury in the tube of, XVII. 325—indicates the variations of the weather, XVIII. 26—use of, in measuring heights, 27—height of mercury in, 26—marine, XX. 27; use of, at sea, ib. See Barometrical Measurements.
 BAROMETRICAL MEASUREMENTS, IV. 462—Laplace on, I. 820.

BAR—BAR

Barometrical areometer, XII. 87.
 BARON, IV. 468—barons of the exchequer, 469—of the Cinque-ports, ib.—in English law, and in heraldry, ib.—coronet of a, XI. 336.
 — (MICHEL), French actor, IV. 469.
 — (ROBERT), English author, IV. 469.
 BARONET, IV. 469; VI. 622—arms of, XI. 340.
 BARONETS of Scotland, or of Nova Scotia, IV. 469.
 — of Ireland, IV. 470; XII. 480.
 BARONI (Leonora), IV. 470.
 BARONIUS (Cæsar), IV. 470.
 BARONY, IV. 470.
 BARQUICIMETO, in Venezuela, IV. 470.
 BARRA, island, IV. 470, 471; XI. 278.
 — or Vara, in commerce, IV. 470.
 — African state, XX. 51.
 BARRACAN, IV. 470.
 BARRACKPORE, in Hindustan, IV. 470—outbreak of the mutiny of 1857 at, XVI. 302.
 BARRACKS, IV. 470—British, III. 664—Turkish, 659—London, XIII. 679—royal artillery, at Woolwich, XXI. 926.
 Barradas, his invasion of Mexico, XIV. 712.
 BARRAMAHAL, in Hindustan, IV. 471.
 BARRAS (P. J. F. Nicolas), Comte de, IV. 471; X. 106, 115 *et seq.*
 BARRATOR, or Barretor, IV. 471, 472.
 BARRATRY, IV. 471.
 BARRAUX, French fortress, IV. 471.
 BARRAY, or Barta, island, IV. 471.
 BARRE (L. F. Joseph de la), IV. 471.
 BARREL, IV. 471—of a watch, ib.—in anatomy, ib.—going-barrel in clocks, VII. 14.
 — of guns, IV. 471; XI. 96; XX. 213—proof of, XI. 97—browning of, 101—rifled, 127—boring of, V. 44—bronzing, 677.
 BARREN CAPE, island, IV. 471.
 — ISLAND, IV. 471.
 BARRÈRE DE VIEUZAC (Bertrand), IV. 471; X. 82 *et seq.*
 Barreto (Pedro), VI. 122.
 BARRETHY, in law, IV. 472.
 Barrett (George), his calculations of annuities, III. 222; XII. 402.
 — (Dr), palimpsest discovered by, IV. 705—his edition of the gospel of St Matthew from a palimpsest, XVII. 209.
 — (Mr), his method of protecting the surface of building-stone, XX. 735.
 — and Co., their steam-engines, XX. 608, 609, 614.
 BARRHEAD, in Renfrew, IV. 472.
 BARRICADE, IV. 472.
 BARRIER, in fortification, IV. 472.
 BARRINGTON (Hon. Daines), IV. 472.
 — (JOHN SHUTE), Viscount Barrington, IV. 472.
 Barringtoniaceæ, nat. order of plants, V. 192.
 BARRISTER, IV. 473; VII. 465; II. 157.
 BARRITUS, IV. 473.
 Barron's lock, XIII. 533.
 BARROS (João de), IV. 473; V. 280—on the Javanese, XII. 705, 706, 707.
 Barrosa, battle of, V. 608.
 Barrot (Odillon), X. 214 *et seq.*, 233, 236.
 BARROW, tumulus, IV. 473—in America, II. 696—in Dorsetshire, VIII. 112.
 — Irish river, IV. 474; XIII. 84; XVIII. 728; XXI. 845.
 — (Dr ISAAC), IV. 474—his unjust depreciation of Ramus, I. 30, n. 3—his character as a theologian and philosopher, 45—anecdote relative to his sermons, ib., n. 2—inconsistency of his opinions on certain ethical questions, 46—estimate of his lectures on optics, 630—his scale of velocities, VIII. 352—Newton's obligations to, 354—on the pursuit of happiness, XV. 573—on wealth, XVIII. 211—on industry, 226, 238.
 — (Sir JOHN), IV. 474—northern voyages of discovery promoted by, XVIII. 171—on the consequences of the battle of Trafalgar, XX. 121.

BAR—BAS

Barrow (John), on the clergy of Iceland, XII. 199.
 BARROW'S STRAITS, IV. 475.
 Barry (Sir Charles), his improvement of street architecture, III. 506—iron roofs designed by, XIX. 395—new palace of Westminster designed by, XIII. 668.
 — (Alexander), on the decomposing effects of electricity, VIII. 588, 597.
 — (Du), his Revalenta, IX. 769.
 — (Edward), iron roof erected by, XIX. 399.
 — (GIRALD DE), IV. 475—on the climate of Ireland, XII. 504.
 — (JAMES), painter, IV. 476—on Raphael's pictures, III. 708—his character as a painter, XVII. 79, 80, 84.
 — (Dr Martin), his microscopical observations on different parts of structure, II. 769—his ascent of Mont Blanc, 628—on the formation of ova, XVII. 682.
 — (Mr), actor, XXI. 175.
 — (Mrs), actress, XXI. 174.
 — in heraldry, IV. 478; XI. 328.
 BARRY-BENDY, in heraldry, IV. 478.
 BARS, in Hungary, IV. 478.
 BARSAC, French town, IV. 478.
 Barsowite, mineral, XV. 72.
 Barsumas, XVI. 152.
 BARTAS (G. de Salluste du), poet, IV. 478.
 — (Du), on zoophytes, XXI. 991.
 BARTER, or truck, IV. 478.
 BARTFELD, town in Hungary, IV. 478.
 BARTH (Jean), IV. 478.
 — (Dr), his discoveries in Africa, II. 211; X. 478, 479—his visit to Baghermi, II. 229—his account of Houssa and Sokoto, XI. 776, 778; of Bornou, V. 50, 51, 53—on the Tschadda, affluent of the Niger, XVI. 266—his visit to Lake Tchad, XXI. 80; to Timbuctoo, 280.
 Barthélemi (M.), V. 558.
 BARTHÉLEMY (Jean-Jacques), French writer, IV. 478.
 — DE GROAIN (St), French village, IV. 480.
 BARTHEZ (Paul Joseph), IV. 480.
 BARTHIUS (Gaspard), IV. 481.
 BARTHOLOMEW (Gaspard), IV. 482—on anatomy, II. 761.
 — (ERASMUS), double refraction discovered by, XIII. 452; XVI. 531.
 — (THOMAS), IV. 482; II. 761—on the period of human utero-gestation, XIV. 423.
 BARTHOLOMEW (St), IV. 482.
 — island, IV. 482.
 — massacre of, X. 32; XI. 625.
 — hospital, London, XIII. 678.
 BARTIZAN, IV. 482.
 BARTOLOCCI (Julius), IV. 482.
 BARTOLOMEO (Francesco), painter, IV. 482—his style of painting, XVII. 66.
 BARTOLOZZI (Francesco), engraver, IV. 482; VIII. 809.
 BARTON (Benjamin Smith, M.D.), naturalist, IV. 482.
 — ON-HUMBER, in Lincoln, IV. 483.
 — (Elizabeth), impostor, II. 42.
 — (Sir John), on microscopic lines, XIV. 801.
 — (Mr), on the population and mortality of the United States, XV. 605.
 — Bridge, aqueduct at, III. 338.
 Barton's coining-machine, VII. 90.
 — lamp, XIII. 171.
 BARTSCH (Adam von), IV. 483.
 BARUCH, the prophecy of, IV. 483.
 Barystrontianite, XV. 95.
 Baryta, genus of birds, XVI. 748.
 BARYTES, or Baryta, IV. 483; VI. 486; XV. 65, 94—Dr Crawford on its medical properties, VII. 486—specific gravity of, XII. 88—used to adulterate white lead, XIII. 302—its poisonous qualities, XIV. 434—optical properties of, XVI. 647.
 Baryto-calcite, XV. 95.
 — celestine, XV. 95.
 BARYTONE, IV. 483.
 BARYTONIUM, IV. 483.
 BAS (Jacques Philippe le), IV. 483.
 BAS-RELIEF, IV. 483, 492.

BAS—BAS

BASALT, IV. 483; XV. 133, 135, 155—specific gravity of, XII. 88—region of, in Syria, XX. 903—contains phosphoric acid, II. 391—Dolomieu on the origin of, VIII. 95—in Ireland, XII. 504—Palestine, XVII. 189—melting and moulding of, XV. 132, n. 2—its columnar structure explained, 165—water in, 151—dyke of columnar, 165—form of, 190.
 BASAN, or Bashan, IV. 483—kingdom of, XX. 903—mountains, ib.
 Basaniste, genus of zoophytes, XXI. 982.
 BASCINET, IV. 483.
 Basco (Michael de), buccaneer, V. 711.
 Base, in architecture, III. 507.
 — of operations, in war, XXI. 703—change of, 706.
 BASEDOW (Johann Bernhard), IV. 483.
 Baseggio (G.), on birds, XVI. 731.
 BASEL, or Basle, in Switzerland, IV. 483, 484; XX. 882—silk manufacture in, 278—battle near, 884—average temperature of, 889—its libraries, XIII. 424.
 Basellaceæ, nat. order of plants, V. 203.
 Basement, in architecture, III. 507.
 Bases, in the trigonometrical survey of Britain, XXI. 334.
 Basette, game with cards, IV. 491.
 BASHAN, IV. 484. See Basan.
 BASHARIANS, a Mahometan sect, IV. 484.
 BASHAW, or Pashá, IV. 484.
 BASHEE ISLES, IV. 484.
 Bashford (Mr), his endeavours to improve the silk-worms of India, XX. 295.
 BASHKIRS, IV. 484—in Russia, XIX. 522.
 BASIGNANA, city of Piedmont, IV. 484.
 BASIL THE GREAT, IV. 484.
 — plant, IV. 485; V. 202; XI. 745.
 — in joinery, IV. 485.
 BASILAN, island, IV. 485.
 BASILEUS, IV. 485.
 BASILIAN MONKS, IV. 485.
 BASILIC, or Basilica, IV. 485—early Roman, III. 446—in modern Rome, XIX. 364, 368—ancient Christian, 445.
 BASILICA, a Greek digest of laws, IV. 485; VI. 747; XIX. 827—Fabrot's translation of, IX. 466.
 BASILICATA, in Naples, IV. 486; XX. 237.
 BASILICI, IV. 486.
 Basilides, Gnostic teacher, X. 687.
 BASILIDIANS, a sect of heretics, IV. 486—worshipped Abraxas, II. 48.
 Basiliensis (Codex), XIX. 838.
 Basiliscus, VII. 311; VIII. 474.
 — genus of reptiles, XIX. 34. See Basilisk.
 BASILISK, a fabulous serpent, IV. 486; XIX. 34—symbol of, in hieroglyphics, XI. 392.
 — a species of ordnance, IV. 486.
 BASILIUS I., IV. 486—his code; See Basilica.
 — II., emperor, VII. 313.
 Basilovitz (John), XIX. 472.
 Basing house, VII. 511.
 BASTINGSTOKE, in Hants, IV. 486—canal, XX. 837.
 — (John), said to have introduced the Greek numerals into England, III. 579.
 BASKERVILLE (John), IV. 486—his types, XVIII. 539—his printing ink, 545.
 BASKET, IV. 486.
 BASKET-MAKING, IV. 487—ancient Britons excelled in, V. 376.
 — OF EARTH, IV. 489.
 BASKING-SHARK, IV. 489; XII. 322, 324—fishing for, on the Irish coast, IX. 634.
 Basmuric version of the Scriptures, XIX. 839.
 BASNAGE (Jacques), IV. 489.
 — (HENRI), IV. 490.
 BASON, IV. 490.
 BASQUE LANGUAGE, IV. 490; IX. 390; XIII. 214.
 — PROVINCES, IV. 490; XX. 493—people, IX. 350, 387; XVIII. 700; XX. 493.
 Basra. See Bussora.
 BASS, or Base, in music, IV. 490; XV. 720—double, 709—bass-drum, 713.
 — ROCK, IV. 490; XI. 177.

BAS—BAT

BASS, kind of matting, XX. 490.
 — STRAITS, IV. 490—discovery of, 253, 286; XXI. 30.
 — VIOL, IV. 490.
 BASSANI (Giovanni Battista), IV. 491.
 BASSANO (Giacomo da Ponte), IV. 491.
 — city in Lombardy, IV. 491.
 BASSANTIN (James), IV. 491.
 BASSE, or sea-perch, XII. 274.
 BASSE TERRE, IV. 491; VI. 643.
 — or Guadeloupe, island and town, XI. 72.
 BASSEIN, Burmese town, IV. 491—treaty of, XI. 504, 506.
 BASSET, or Basette, IV. 491.
 — in geology, XV. 168.
 — HORN, IV. 492; XV. 710.
 — (PETER), IV. 492.
 BASSETING, IV. 492.
 BASSI (L. M. Caterina), IV. 492.
 — (Augustino), his work on the silk-worm, IX. 23.
 BASSIA, genus of plants, IV. 492; V. 199.
 — butter, XVI. 496.
 BASSO-RELIEVO, IV. 492; XIX. 5.
 BASSOON, IV. 492; XV. 711.
 BASSORA, IV. 492; VI. 24—its commerce, XI. 460.
 — gum of, XI. 94.
 Bassorin, V. 73.
 BASSUS, genus of insects, IV. 492; IX. 191.
 BASTARD, IV. 492—duties between parents and, XVII. 276.
 — sugars, XX. 795.
 BASTARDS, a kind of banditti, IV. 494.
 BASTARDY, arms of, IV. 494—bastardy law, XVIII. 313.
 BASTARNÆ, IV. 494.
 BASTARNICÆ ALPES, IV. 494.
 Baster on zoophytes, XXI. 990, 992 n., 996 n. 6.
 BASTERNA, IV. 494.
 BASTIA, town in Corsica, IV. 494; VII. 417—siege of, XVI. 133.
 BASTIAT (Frédéric), IV. 495.
 BASTILLE, IV. 495—its destruction, X. 52.
 BASTINADO, IV. 495.
 BASTION, IV. 495—demi-bastions, IX. 809—bastioned forts and lines, ib.—bastioned system of fortification, 831.
 BASTON, or Baton, IV. 496.
 — (ROBERT), IV. 496.
 BASTWICK (Dr John), IV. 496.
 BAT, IV. 496; XIV. 146, 150; XVII. 632; XXI. 547—hybernation of, III. 180; XII. 62—teeth of, XVI. 452—in Egypt, VIII. 432—precision of their actions when deprived of sight, XX. 498—in Java, XII. 704.
 — or Batz, coin, IV. 496; XV. 445.
 Batalha, conventual church of, III. 449.
 BATAVI, IV. 496, 497.
 BATAVIA, town in Java, IV. 496; XII. 709—attack of, III. 675—Dutch trade at, 757—Captain Cook's visit to, VII. 340.
 Batavians, XI. 561.
 BATAVORUM INSULA, IV. 497.
 BATE (George), IV. 497.
 — ISLE, IV. 497.
 Bateman (Dr), on the diseases of London, XV. 608.
 BATENITES, IV. 497.
 BATES (William), D.D., IV. 498.
 BATH, in Somerset, IV. 498—in Maine, ib.
 — or lower oolite, XV. 206, 207—as a building-stone, XX. 712, 717.
 — KNIGHTS OF THE, IV. 498; XI. 340; XIII. 119—Knight companion of, 114.
 BATH-KOL, a species of oracle, IV. 499.
 BATHGATE, in Linlithgowshire, IV. 499.
 Bathiergus, genus of mammalia, XIV. 185.
 BATHING, IV. 499—of sheep, II. 349—Egyptians fond of, VIII. 448—promotes health, XIV. 440. See Baths.
 BATHS, IV. 505—ancient, ib.—modern, ib.—Roman, III. 470; XIX. 313—number of, in Cairo, VIII. 448—mud, XV. 39—of Pompeii, XVIII. 287—in London, XIX. 603. See Bathing, Buxton, Carlsbad, &c.

BAT—BAU

BATHURST (Allen, Earl of), IV. 507.
 — (RALPH), M.D., IV. 508.
 — county in New South Wales, IV. 508, 282, 284, 289.
 — town in Western Africa, IV. 508.
 — island, on the north coast of Australia, IV. 508.
 — island in the Arctic Seas, IV. 508.
 BATHYANI, IV. 508.
 BATHYCLES of Magnesia, sculptor, IV. 508.
 Bathygnathus, fossil reptiles, XVII. 141.
 BATHYLLUS of Alexandria, dancer, IV. 508, 398.
 BATILUS, musical instrument, IV. 508.
 BATISTE, kind of cloth, IV. 508.
 BATMAN, a kind of weight, IV. 508.
 BATMANSON (John), IV. 508.
 BATNÆ (Sarug), ancient city of Mesopotamia, IV. 508.
 BATNEARS, or Batties, a people of Hindustan, IV. 508.
 Batoana, African tribe, XVI. 241.
 BATON ROUGE, town in Louisiana, IV. 509.
 BATON, or Batoon, IV. 509, 496.
 BATONI (Pompeo Girolamo), painter, IV. 509.
 Batory (Ladilaus), his Magyar translation of the Bible, XII. 19.
 — king of Poland, XVIII. 143.
 Batrachia, reptiles, XVII. 634—fossil, 153—distribution of, 154, 634.
 BATRACHIANS, IV. 509; XIX. 73—teeth, XVI. 430—fossil, XVII. 132—their bones, III. 86 *et seq.*—cochlear aperture, 99—vocal organs, 102—heart, 112—gills and lungs, 113—fecundation, XIX. 14—respiration, 74—reproduction, 75—eggs, 74—number known, 51, n.
 Batrachite, mineral, XV. 89.
 Batrachocephalus, genus of fishes, XII. 262.
 BATRACHOMYOMACHIA, IV. 509.
 Batrachopus, fossil reptiles, XVII. 132.
 Batrachus, genus of fishes, XII. 311, 312.
 BATSCH (A. J. George Charles), naturalist, IV. 509.
 BATTÀ, IV. 510.
 Battailon (Dr), on the manner in which Roman Catholic missionaries baptise pagan children, XV. 277.
 BATTALIA, IV. 510.
 BATTALION, IV. 510; III. 640 *et seq.*—of artillery, 685 *et seq.*; XXI. 715 *et seq.*
 BATTAS, country in Sumatra, IV. 510; XX. 806—inhabitants of, III. 749; XX. 805—their cannibalism, III. 270; XX. 805—their language, XIII. 207—mode of writing, XX. 805.
 BATTEL, IV. 510; III. 323; VIII. 230.
 Battel's account of the orang-outang, XIV. 137.
 BATTEN, IV. 510; V. 750.
 Batter, in architecture, III. 507.
 BATTERING, IV. 510—ram, ib.
 Battersea Park, London, XIII. 668—bridge, 676.
 BATTERY, IV. 510; III. 685 *et seq.*—different kinds of, IV. 511—floating iron batteries, XX. 138—electrical, VIII. 611—galvanic, I. 739; XXI. 611 *et seq.*
 — in law, IV. 511.
 Batthanyi (Count Casmir), XII. 23, 24.
 BATTICALOA, island, IV. 511.
 BATTIE, or Battý, IV. 511. See Batnears.
 BATTLE, town in Sussex, IV. 511.
 — engagement, IV. 511—Roman battles, III. 633—plan of, XXI. 698.
 — (Naval), XXI. 719 *et seq.*—rules concerning, 707.
 — trial by, IV. 510; VIII. 230.
 — AXE, IV. 512; VI. 616; III. 636.
 — of the Four Days, V. 422.
 BATTLEMENT, IV. 513; III. 507.
 Battoni (Pompeo), painter, XVII. 69.
 BATTORY, IV. 513.
 BATTU, island, IV. 513.
 BATTUE, IV. 513.
 BATUM, town in Asiatic Turkey, IV. 513.
 BAUCIS, IV. 513.
 BAUDELOCQUE (Jean-Louis), IV. 513.

BAU—BAY

- BAUDELLOT DE DAIRVAL (Charles Cesar), IV. 513.
 Baudet-Lafarge (M. T.), his works on insects, IX. 11.
 BAUDIER (Michel), IV. 513.
 Baudin (M.), his account of a meteorolite, XIV. 630.
 — (Capt.), his voyage of discovery to New Holland, IV. 253.
 BAUDIUS (Dominicus), IV. 513.
 Baudrun, V. 10.
 Bauer (M.), his microscopic observations on the spleen, II. 802—on the brain, 819—on the muscular filament, 821—on the optic nerve, 808—on blood-globules, XIV. 762.
 — (J. J.), on rare books, IV. 709.
 BAUGE, in France, IV. 513.
 — a kind of druggist, IV. 513.
 BAUHIN (Jean), botanist, IV. 513.
 — (GASPARD), IV. 513.
 Bauhinia, a colossal tree of Venezuela, XXI. 536.
 Baulite, mineral, XV. 70.
 Baumann (C. Jacob), on human mortality, XV. 601.
 BAUMANS' HÜHLE, natural caverns, IV. 514.
 Baume, in France, VIII. 114.
 — (ANTOINE), IV. 514—his mode of manufacturing sal-ammoniac, II. 722—his areometer, III. 391—on clays, V. 344.
 BAUMGARTEN (Alex. Gottlieb), IV. 514; II. 188.
 Baumgartner (M.), on magnetism, XIV. 13—on solar magnetism, XVI. 596.
 Baumhauer, his work on insects, IX. 11.
 Baur (F. C.), on ancient mysteries, XV. 754.
 — (JOHANN WILHELM), painter, IV. 514.
 Bauschius (J. L.), Academy of Nature Curiosi founded by, II. 62.
 BAUTZEN, in Saxony, IV. 514—battle of, X. 161.
 BAVARIA, IV. 515—army of, III. 652—Joseph II.'s plan of exchanging the Austrian Netherlands for, V. 516—monarchy of, XV. 412—Bavarian dialect, X. 587—presbyterianism in, XVIII. 485—coins of, XV. 441, 443—postal system, XVIII. 424—weights and measures, XXI. 810—universities in, 492—trade schools of, 323.
 Bavarian beer, V. 335—brewed in Edinburgh, 336.
 Baverstock (Mr), on brewing, V. 319.
 BAVIUS and MÆVIUS, IV. 520.
 BAWTRY, town in Yorkshire, IV. 520.
 BAXTER (Andrew), IV. 520—Warburton's eulogy on his work on the Nature of the Human Soul, I. 205—estimate of his merits, 206—his theory of dreams, VIII. 176.
 — (RICHARD), IV. 520—made chaplain to Charles II., V. 420—Calamy's Abridgment of his history of his Life and Times, VI. 66.
 — (WILLIAM), IV. 522.
 Baxterian scheme of predestination, XVIII. 479.
 BAY, IV. 522; X. 483.
 — tree, IV. 522; V. 204.
 — colour, IV. 522—salt, ib.
 — window, IV. 522; III. 507.
 Baya, bird, XVI. 760.
 BAYADEER, Indian dancing girl, IV. 522; VII. 646.
 BAYAN-KHARA, mountains, IV. 522.
 BAYARD (Pierre du Terrail), Chevalier de, IV. 522; VI. 615.
 BAYAZID, or Bajazid, Turkish city, IV. 523.
 BAYEN (Pierre), chemist, IV. 523.
 Bayer's catalogue of stars, IV. 80.
 Bayes (Rev. Mr), on probability, XVIII. 589.
 BAYEUX, town in France, IV. 523—tapestry, ib.; XXI. 20—lace, XIII. 142, 143.
 Bayezed, VIII. 486.
 Baylounda, desert of, XVI. 268.
 BAYLA, or Bela, IV. 523.
 BAYLE (Pierre), IV. 523—Condillac's re-

BAY—BEA

- marks on his refutation of Spinoza, VII. 235—the first writer who led to the misapplication of the term *Spinozism*, I. 147—character of his writings, 151—opinions of the learned at the time of his appearance divided between Aristotle and Descartes, 152—his scepticism and ironical humour, ib.—probable reasons for the omission of Montaigne from his dictionary, 152, 153—motives for copying the spirit and tone of the old academic school, 153—his character by Warburton and Leibnitz, ib., n. 2; and by Gibbon, ib., n. 3; 151, n. 3—his critical acumen unparalleled, but his portraits of persons defective, 154—causes which contributed to unsettle his opinions, ib.—fluctuations of his religious creed, ib.—his propensity to indecency, ib.—mischievous tendency of his writings, 155—benefits which have resulted to literature from his labours, ib.—his leaning to the system of the Manichæans apparent, but not real, ib.—estimate of his genius and acquirements, 156—lessons of historical scepticism to be learned from, ib.—his *Commentaire Philosophique*, 156, n. 4—on anonymous books, IV. 711—his scepticism, XIX. 709.
 Bayley (John), his story of Pope Joan, XII. 786.
 BAYLY (Lewis), IV. 524.
 Baynes on logic, XIII. 576, 585.
 Baynton (Mr), on the cure of ulcers, XX. 828.
 BAYONET, IV. 524—its value in war, XXI. 726.
 BAYONNE, IV. 524.
 BAZA, a city in Spain, IV. 524.
 BAZAAR, IV. 524—bazaars of Damascus, VII. 639—of Baghdad, IV. 362—of London, XIII. 663—Morocco, XV. 597—Jerusalem, XII. 746—Persia, XVII. 424.
 BAZAS, in France, IV. 525; X. 632.
 BAZAT, or Baza, a kind of cotton, IV. 525.
 BAZEERGURS, tribe of Indians, IV. 525.
 BAZGENDGES, IV. 525.
 Bazoche, kingdom of the, an order, XIII. 122.
 BAZZANO, Italian city, IV. 525.
 Bdella, genus of arachnides, III. 388.
 — genus of annelides, XI. 306.
 BDELLIUM, IV. 525.
 Beaches, XVII. 585—raised, in geology, ib.; XV. 216—in Norway, XVI. 322.
 BEACHY-HEAD, IV. 525—naval action off, in 1690, XX. 840.
 BEACON, IV. 525.
 BEACONAGE, IV. 525.
 BEACONSFIELD, IV. 525.
 BEAD, IV. 526—in architecture, III. 468, 507—bead-proof, IV. 526—bead-roll, ib.—bead areometer, III. 392.
 BEADLE, IV. 526.
 BEAGLE, IV. 526; XI. 771.
 Beah, river in the Punjab, XVIII. 687, 688.
 BEAK, or beak-head, of a ship, IV. 526.
 BEAKED, in heraldry, IV. 526.
 BEALE (Mary), painter, IV. 526.
 — (Mr), on the sperm-whale, XIV. 232.
 — (Mr), aviary and gardens of, at Macao, XVI. 767.
 BEAM of a loom, IV. 526.
 Beam-compass, IV. 526.
 Beam-engines, stationary, XX. 603—modified arrangements of, 607—compound, ib.
 Beaming, in weaving, XXI. 784.
 BEAMINSTER, town in Dorset, IV. 526.
 Beamish (Major), on the military character of the French, III. 642.
 Beams, strength of, VI. 260; XIX. 375 *et seq.*; XX. 760 *et seq.*—building up of, VI. 261—fishing a beam, 263—flexure of, I. 875—beams of a ship, IV. 526; XX. 186, 194—in the construction of iron bridges, XII. 586, 590—iron-beams, XX. 177.
 BEAN, IV. 526; IX. 760—cultivation and

BEA—BEA

- varieties of, II. 312; XI. 738—bean-straw as fodder, II. 313—inorganic constituents of, V. 96.
 Bean, kidney, or French, IV. 526; IX. 760; XI. 738.
 — caper, order of plants, V. 188.
 — COD, small fishing vessel, IV. 527.
 — FLY, IV. 527.
 BEAR, IV. 527; XIV. 153; XVII. 632—dentition of, XVI. 462—in Lapland, XIII. 235—fossil, XVII. 172—fur from different species of, X. 349—hunting of in Sweden, XX. 211—shooting, ib.—a constellation, IV. 527—order of the, a Swiss military order, 527.
 Bearberry, V. 198.
 BEAR-ISLAND, IV. 527.
 BEAR-LAKE (Great), IV. 527.
 BEARD, IV. 527—of the Egyptians, VIII. 434—Persians, XVII. 421—kissing the, IV. 529—women with, ib.—of a comet, ib.
 Beardmore (Mr), on hydraulics, XII. 127, 135, 141.
 BEARING, in navigation, IV. 529; X. 482—starboard and larboard line of, XXI. 919, 720.
 — in heraldry, IV. 529.
 — in mechanics, XIV. 405, 406.
 Bearn, French province, X. 277.
 BEAST, IV. 529.
 — fights, among the Romans, X. 399; II. 731.
 BEAT, IV. 529—of drum, ib.
 — (St), French town, IV. 529.
 BEATERS, IV. 529. See Gold-beating.
 BEATIFICATION, IV. 529.
 BEATING THE WIND, IV. 529—beating time, ib.—beating, in navigation, ib.
 BEATITUDE, IV. 529—mount of beatitudes, XVII. 183.
 BEATON (David), cardinal, IV. 530; XIX. 773, 776—assassination of, III. 135; XIX. 777.
 — (James), XIX. 769, 773—St Mary's College at St Andrews founded by, XXI. 473.
 Beatson (Dr), on naval signals, XVI. 109.
 BEATTIE (James), LL.D., IV. 530—on Locke's views concerning innate ideas, I. 117—effect of his writings in diffusing a taste for enlightened criticism, 222—on dreams, VIII. 176—on grammar, X. 766 and n. 772—poetry of, XVIII. 125.
 — (Joseph), his plan for preventing smoke in locomotives, XX. 358.
 BEAUCAIRE, a French town, IV. 532—Canal de, X. 244.
 Beauchamp (M.), his survey of the Black Sea, IV. 740.
 Beaufort (Admiral Sir Francis), on the surveys of the African coast, II. 510.
 — (Cardinal), IV. 532; VIII. 688, 689.
 — French town, IV. 532.
 — (Dr), on the words that enter into the composition of Irish names of places, XII. 524.
 Beaufoy (Mr), his attempt to procure the repeal of the test and corporation acts, V. 522.
 — (Colonel), on the variation of the needle, XIV. 53, 54—his variation transit, 81—his ascent of Mont Blanc, II. 627—Society for the Improvement of Naval Architecture instituted by, XX. 134—his experiments on the resistance of water to vessels, 158, 163, 662.
 BEAUMARNOIS (Eugene), IV. 532; X. 151 *et seq.*
 Beaujais, wines of, XXI. 883.
 BEAULIEU (Sébastien de Pontault de), IV. 532—his expedition against Algiers, II. 569.
 BEAULX, in Inverness-shire, IV. 532.
 Beaumanoir (Philippe de), on French feudal law, IX. 524.
 BEAUMARCHAIS (Pierre A. Caron de), IV. 532.
 BEAUMARIS, in Anglesey, IV. 533; III. 146.

BEA—BEC

- Beaumé (M.), on the composition of gunpowder, XI. 152—his hydrometer, III. 391.
 BEAUMONT (Sir G. Howland), IV. 533; XVII. 86.
 — (Sir John), IV. 533.
 — (Mr), his lead mines, XV. 193, n. 243.
 — (Dr), his experiments on digestion, IX. 768; XVII. 659, 660.
 — (Sir George), his liberality to Wordsworth, XXI. 931—his influence on art, 387, 388.
 — and FLETCHER, IV. 533—their merits as dramatists, VIII. 159—lines of the former on the royal tombs in Westminster, XV. 415.
 — (M. de), on the Deluge, VII. 720.
 Beaumontite, mineral, XV. 76.
 BEAUNE, in France, IV. 534.
 Beaumont (M. de), on American penitentiaries, XVIII. 571.
 BEAUPRÉAU, in France, IV. 534.
 BEAUSOBRE (Isaac de), IV. 534.
 Beautiful, signification of the word in Plato's works, I. 317.
 BEAUTY, IV. 534—elements of, in architecture, III. 483—sensibility of the Greeks to, XVII. 49; XIX. 850, 851—ideal, 851—emotions of, in the processes constituting eloquence, 137, 138—article on, in this work, written by Jeffrey, XII. 717.
 BEAUVAIS, in France, IV. 555—carpet-manufactory at, VI. 271.
 BEAVER, IV. 555; XIV. 185; XVII. 632—bones of its tail, III. 76—pairing of, 181—its fur, X. 348—mode of manufacturing the skin, 351—instincts of, XII. 391—dentition of, XVI. 454, 455.
 — hats, XI. 240-1.
 — part of a helmet, IV. 555.
 Bébé, a dwarf, VIII. 271.
 Bebeerine, alkaloid, V. 204.
 BECAFICO, species of bird, IV. 555.
 BECCAFUMI (Domenico Mecherino), IV. 555.
 Beccamoschino, bird, XVI. 756.
 Beccari, Italian poet, XVIII. 111.
 — on ignis fatuus, XIII. 457.
 BECCARIA (C. B., Marquis of), IV. 555—his objection to the right of property, XVIII. 228—on law, XIII. 270.
 — (GIAMBATTISTA), IV. 559—on aurora borealis, 250—on electricity, VIII. 528—measurement of a degree by, IX. 550—on the cause of the formation of clouds, VII. 39—on the electricity of the atmosphere, VIII. 578—on the magnetic effects of electricity, 600.
 BECCLES, in Suffolk, IV. 561.
 — (Mr), fossil mammals discovered by, XVII. 161.
 BECERRA (Gaspard), IV. 561; XVII. 75.
 Beche (Sir H. de la), his report on coal for the steam navy, X. 319—on the bars at the mouth of rivers, XI. 225—on the value of the produce of British mines, XV. 247—on the transportation of detritus by rivers, XVI. 85—on the formation of deltas, 86—museum of economic geology promoted by, XXI. 323.
 BECHER (Johann Joachim), IV. 561.
 Bechtermunze (Henry and Nicholas), early printers, XVIII. 532.
 BECK, or Beke, IV. 561.
 — or Beek (David), painter, IV. 561.
 — (Dr), his work on medical jurisprudence, XIV. 424.
 BECKET (Thomas à), IV. 562; VIII. 671—his murder, 673.
 — (St Thomas), brotherhood of, XXI. 908.
 BECKFORD (William), IV. 563.
 — Lord Mayor of London, his address to George III., V. 471; XXI. 308.
 — (Mr), on hounds and hunting, XI. 664, 765 *et seq.*; XII. 34.
 Beckford's fuse for blasting rocks under water, IV. 756.

BEC—BEE

- BECKMANN (Johann), Professor at Göttingen, IV. 563—his history of coaches, VII. 42—on the burning of books by the clergy, IV. 712—on the diving-bell, VIII. 60.
- Beclard (Mons.), on adipose tissue, II. 787—on arterial tissue, 790—on erectile tissue, 799—on the spleen, 801—on exhalants, 803—on lymphatics and lymphatic glands, 805—on the ligaments, 823, 824—on fibro-cartilage, 832—on the mucous membranes, 836—on the skin, 834—on the villi of the ileum, III. 61—on the classification of the organs of the human body, 3.
- Becquerel (M.), on diamagnetism, I. 980, 981—on the pyro-electricity of tourmaline, VIII. 559—on the influence of heat on the electric fluid in metals, 561—on electricity produced by pressure, 563; and by combustion, 569—on magnetism, XIV. 23, 28, 29; I. 981—on the composition of the blood, XVII. 664; of the urine, 666—on the spectrum, XVI. 550, 595—his decomposing cell, XXI. 620—on electrical currents, 623, n. 1—discoveries of, 632—experiments in voltaic electricity, 621, 633, 635, 637—his work on electricity, 655.
- BECTASSE, Turkish sect, IV. 564.
- BED, IV. 564—dining-bed, ib.; II. 80—of justice, IV. 565.
- in geology. See Strata.
- BED-CHAMBER, Lords of the, IV. 565; XI. 775—ladies of the, 776—bed-chamber women, 776.
- Bed-lathes, XXI. 390.
- Bed-mould, in architecture, III. 508.
- Bed-work irrigation, XII. 612.
- BEDA, Venerable Bede, IV. 565—his Saxon-English Bible, XIX. 840.
- BEDARRIÉUX, French town, IV. 565.
- BEDDOES (Thomas), physician, IV. 565—Sir Humphry Davy's connection with, VII. 667; I. 967, and n. 1.
- BEDA, IV. 567. See Beda.
- BEDELL (Dr William), bishop of Kilmore and Ardagh, IV. 567—Burnet's Life of, V. 792.
- BEDFORD, IV. 567.
- LEVEL, IV. 567; VI. 114; II. 363; VII. 510; XII. 48; XIX. 12—pauperism in, XVIII. 304, n. 2.
- NEW, seaport in Massachusetts, IV. 568—free library at, XIII. 430.
- (Duke of), on peace with France in 1800, V. 570.
- castle, VI. 327.
- willow, XVII. 759.
- BEDFORDSHIRE, IV. 568—population and value of property in, VIII. 754.
- BEDLAM, IV. 569.
- BEDLOE (William), IV. 569.
- BEDNORE, in Hindustan, IV. 569—treasure taken in, XI. 494.
- Bedos (F. de Celles), on the organ, XVI. 709.
- BEDOUINS, IV. 569; III. 348 *et seq.*—of Hadhramaut, 358—moral character of the, 354—in Idumaea, XII. 359; Syria, XXI. 907. See Arabs.
- BEDRIACUM, village of Cisalpine Gaul, IV. 569—battle of, XIX. 339.
- Beds of rivers, XIX. 204, 205, 207.
- BEDWORTH, in Warwickshire, IV. 569.
- BEDWYN (Great), in Wiltshire, IV. 570.
- BEE, IV. 570; XVII. 637—Butler's work on bees, II. 257—bees'-wax, IV. 572—feeds on poisonous plants, III. 180—stingless species in Jamaica, XII. 682—instincts of, 391—construction of combs, 391, 392—mode in which the three different kinds are produced, XVII. 688—its sting poisonous, XIV. 440—leaf-eating, IX. 199—mason, 200—solitary, 201—honey, 203—humble bees, 201. See Apilary.
- BEE-EATER, bird, IV. 588, 585—common, XVI. 772—cowled, knob-fronted, and poe, 754.
- BEECH, IV. 588; XVII. 758—timber, XXI. 274—strength of the wood, XX. 757—specific gravity of the wood, XII. 89.

BEE—BEI

- BEECH-MAST, IV. 588—oil, ib.
- BEECHY (Sir William), painter, IV. 588.
- (Admiral), his arctic expedition, X. 473, 296; XVIII. 171, 172—on the bore of the Severn, XVI. 65, 66—on the low water-line of the Severn, 73, n. 2—on the specific gravity of sea-water, XVII. 573.
- Beeching (Mr), his life-boat, XIII. 446.
- BEEDE, in India, IV. 589.
- BEEF, IV. 589; IX. 761—loss of weight in roasting, 765; in boiling, 766—imports and exports of, VIII. 734, 736.
- BEEF-EATER, yeoman of the Guard, IV. 589; XI. 74—origin of the name, III. 324.
- bird, IV. 589; XVI. 762.
- Beefwood order of plants, V. 208.
- BEELE, a kind of pickaxe, IV. 589.
- BEELEBUL, IV. 589, 338—oracle of, XVII. 515.
- BEEHMAH, river in Hindustan, IV. 589.
- BEER, or BIR, town in Asiatic Turkey, IV. 589, 726.
- IV. 589; IX. 759—discovery of, assigned to the Egyptians, V. 318—among the ancients, ib.—in France, X. 256—brewing, storing, and fining, V. 318 *et seq.*, 330—Bavarian, 335; IV. 517—Prussian, XVIII. 669—Mr Stevenson's mode of analysis for, V. 336—the distillation process of analysis for, 337—quantity brewed in England, VIII. 731—value of exports of, from the United Kingdom, 736—beer measures, XXI. 808—Irish trade in, XII. 521—in Scotland, XIX. 805.
- machine, Bramah's, V. 273.
- (Dr E.), on Sinaitic inscriptions, XVII. 535.
- BEERALSTON, in Devonshire, IV. 589.
- BEER-REGIS, in Dorsetshire, IV. 589.
- BEERSHEBA, IV. 589.
- BEES (St), in Cumberland, IV. 589.
- BEESTINGS, IV. 589; VII. 152.
- BEET, or BETA, genus of plants, IV. 589; V. 74, 203; XI. 740, 741; IX. 760—its culture in Belgium, IV. 624—different kinds of, XX. 796—inorganic constituents of, V. 96.
- root sugar, its manufacture, II. 83; IV. 589; XX. 791, 792, 796 *et seq.*—in France, X. 248, 256; II. 335—in Germany, ib.—Belgium, IV. 625—in England and Ireland, II. 334, 335—Prussia, XVIII. 666.
- BEETHOVEN (Ludwig Van), IV. 590—his education in music, XV. 703—on recitative, 718—his opera Fidelio, XXI. 795.
- BEETLE, an order of insects, IV. 590; IX. 25—found in sarcophagi, IV. 473—their tenacity of life, III. 176—meaning of, in hieroglyphics, XI. 381—of the turnip, II. 319. See Coleoptera.
- a wooden instrument, IV. 590.
- BEEVES, IV. 590.
- BEFORT, or Belfort, in France, IV. 590.
- BEGA (Cornelius), painter, IV. 591.
- BEGARELLI (Antonio), IV. 591.
- BEGGAR, IV. 591.
- Begging friars, XIV. 497.
- See Mendicancy, Alms.
- BEGLERBEG, or Beglierbey, IV. 591.
- Begoniaceæ, nat. order of plants, V. 204.
- BEGUARDS, IV. 591.
- BEGUINES, IV. 591.
- Begums of Oude, XI. 495.
- BEHABAN, IV. 591.
- BEHEADING, IV. 591; XIV. 445.
- BEHEM (Martin), IV. 591.
- BEHEMOTH, IV. 591.
- BEHMEN (Jacob), IV. 592. See Boehm.
- BEHN (Aphara), IV. 592—her novels, XIX. 270—plays of, XXI. 171.
- BEHRING'S ISLAND, IV. 592; II. 464.
- STRAIT, IV. 592.
- voyages, II. 464; XVIII. 170.
- Behut, river, XII. 785.
- Beighton (Henry), his improvements on the steam-engine, I. 770; XX. 575.
- BEILAN, in Syria, IV. 592.
- BEINASCHI (Giovanni Battista), IV. 592.
- Being, Aristotle's notion of, III. 547—

BEI—BEL

- Buddist opinions of, X. 723—philosophy of, XIV. 603—Plato on, XVII. 798, 801.
- Beirout, IV. 691. See Beyrout.
- BEIT-EL-FAKIH, in Arabia, IV. 592.
- BEITH, IV. 592.
- BEJA, in Portugal, IV. 592.
- BEJAPOUR, in India, IV. 592.
- Beke (Dr), his researches in Abyssinia, II. 57—on the mountains of the moon, 213.
- BEKES, in Hungary, IV. 593.
- BEKKER (Balthasar), IV. 593—his work against witchcraft, III. 313—persecuted for it by the clergy, 314, 315, n. 1—his life and writings, 313, n.
- BEL (Matthias), IV. 593.
- or Belus, the supreme god of the Chaldeans, IV. 593—temple of, at Babylon, 341.
- AND THE DRAGON, an apocryphal book, IV. 593.
- Bela, or Bayla, IV. 523.
- BELAY, sea-term, IV. 593.
- BELBEIS, Egyptian town, IV. 593; VIII. 498.
- Belcher (Sir Edward), his searching expedition, XVIII. 171, 173.
- BELEMNITE, fossil, IV. 593; XV. 398; XVII. 114.
- Belemnitidæ, family of extinct mollusks, XV. 398.
- Belemnitis, fossil cuttle-fish, XVII. 114.
- BELENYES, town in Hungary, IV. 593.
- BELENIUM, IV. 594.
- BELESIS, IV. 594.
- BELFAST, IV. 594—cotton manufacture of, VII. 458—linen manufacture of, XIV. 285—societies in, XX. 368.
- BELFORD, in Northumberland, IV. 594.
- BELFORT, or Befort, IV. 595, 590.
- Belfour (J. Daniel), his rope machinery, XIX. 406, 408.
- BELFRY, IV. 595.
- Belgic skull, III. 29.
- BELGICA GALLIA, IV. 595.
- BELGINUM, IV. 595.
- BELGIUM, IV. 595; IX. 399—its separation from Holland, XI. 580—Devonian rocks of, XV. 199; carboniferous, 204; eocene, 213; miocene, 214—monarchy of, 412—French intervention in, X. 205—works on the population of, XV. 620—duties on British fish in, IX. 641, n. 2—annual production of coal, VII. 126; and extent of coal area in, 127—British consul in, 337—iron ores of, XII. 541, 574—Jews in, 783—Belgian versions of the Bible, IV. 702—libraries of, XIII. 423—newspapers of, XVI. 202—coins of, 388—lace manufacture, XIII. 143—proportion of insane, XIV. 536—paper-making, XVII. 261—metallic produce of, XV. 248—railway statistics, XVIII. 787—postal system, 424—beet-root sugar, XX. 798—weights and measures, XXI. 810—universities in, 492. See Holland.
- BELGOROD, Russian city, IV. 627.
- BELGRADE, IV. 627; XX. 61, 62—Prince Eugene's victory at, IX. 370—siege of, by the Turks, XXI. 369—taken by Solyman the Magnificent, ib.; XX. 407—taken by the Austrians, XXI. 371.
- Belgrano (General), IV. 832.
- Belhaven (Lord), on agriculture, II. 261.
- Belhelvie links base, in trigonometrical survey, XXI. 332, 334.
- BELLAL, IV. 627.
- BELIDOR (Bernard Forest de), IV. 627—on hydraulics, XII. 107—on the strength of beams, VI. 259—experiments on the strength of timber, XX. 772.
- BELIER, IV. 627—different degrees of, I. 477—how produced, XIX. 119.
- BELIEVERS, IV. 627.
- BELION, river, IV. 627.
- BELISARIUS, IV. 627; VII. 312; XII. 641; XIII. 28; XIX. 363.
- Belize or Balize. See Honduras.
- town, XI. 610.
- BELL, IV. 627—curfew, VII. 591—church bells, IV. 628—foundry of, IX. 844—great bell of Moscow, XV. 654—baptism of, IV. 426.

BEL—BEL

- Bell in architecture, III. 508.
- (ANDREW), D.D., IV. 630—founder of Madras College at St Andrews, ib.; III. 136—his schools, XV. 822.
- (BENJAMIN), surgeon, IV. 630.
- (Sir CHARLES), IV. 630—his anatomical labours, II. 767, 768—his work on the brain, 814—on the distinction of the nerves of sensation and motion, 814; XVII. 676—on the nerves between the brain and muscles, II. 815—his Bridge-water Treatise, V. 364.
- (Dr), of Manchester, VII. 594.
- (GEORGE JOSEPH), professor of law, IV. 631.
- (HENRY), mechanist, one of the first who employed steam in navigation, IV. 631.
- (Capt. Henry), his translation of Luther's Colloquia Mensalia, II. 740.
- (JOHN), of Antermony, IV. 631.
- (JOHN), anatomist and surgeon, IV. 631.
- (Lieut.), his method of shooting a rope from a wrecked vessel, XIII. 440.
- (Mr), on lizards, XIX. 30.
- (Rev. Patrick), his reaping-machine, II. 276.
- (Thomas), on the teeth, III. 26—on the three-toed sloth, XIV. 121, n.—on the dentition of the mole, XVI. 450.
- Bell-bird, XVI. 750.
- Bell-glass, XI. 248, 249.
- Bell-metal, IV. 627; V. 277; VI. 497—cannons of, 181.
- BELL-ROCK LIGHTHOUSE, IV. 632; XIII. 465; XX. 695—carrier-pigeons employed at, VI. 275—ravages of Limnoria terebrans at, VII. 542—force of waves at, XI. 216.
- Bell-towers, III. 449.
- BELL'S REAPING-MACHINE, IV. 632; II. 276.
- BELLA (Stefano de la), IV. 632.
- Belladonna. See Nightshade.
- BELLAGGIO, town in Lombardy, IV. 632.
- BELLAI (Guillaume du), IV. 632.
- BELLANO, town in Lombardy, IV. 632.
- Bellarmin on theology, XXI. 205.
- BELLARMINO (Roberto), cardinal, IV. 632.
- BELLASPOOR, in Northern India, IV. 632.
- BELLEAU (Remi), poet, IV. 632.
- BELLEGARDE, French fortress, IV. 632.
- BELLE-ISLE, French island, IV. 632—capture of, by the British in 1760, V. 465.
- American island, IV. 632.
- straits of, XVI. 171.
- BELLENDEN (John), IV. 632—his translation of Boece's Chronicle, XVIII. 538.
- (WILLIAM), IV. 635.
- BELLEROPHON, IV. 637.
- genus of mollusks, XV. 375—fossil, XVII. 109.
- BELLES-LETTRES, IV. 638—academies of, II. 70.
- BELLEVOIS, painter, IV. 638.
- BELLEY, French town, IV. 638.
- Bellingeri (C. F.), on the spinal chord, II. 768—on the nerves of motion and sensation, 814.
- BELLINI (Gentile), painter, IV. 638; XVII. 70.
- (GIOVANNI), IV. 638.
- (JACOPO), IV. 638.
- (LORENZO), anatomist, IV. 638; II. 762.
- (VINCENZO), composer, IV. 638.
- Bellinurus, fossils, XVII. 101.
- BELLIS, genus of plants, IV. 638; XI. 748.
- Bellman (Carl Michael), Swedish poet, XIX. 699.
- Belloguet (Baron de), on the Celtic language, XVII. 530.
- BELLONA, IV. 638.
- BELLORI (Giovanni Pietro), IV. 638.
- Bellot (Lieut.), XVIII. 171, 173, 174.
- BELLOVACI, IV. 638.
- BELLOWS, IV. 638, 795; XVIII. 81—common, IV. 795—single and double, ib.—wooden, ib.—circular, ib.—anchor-smith's, III. 119—contrivance to prevent the noise of, 137—glass-blower's, IV. 792—water-bellows, XII. 183—hydrostatic, 81.

BEL—BEN

Bells, electrical, IV. 630; VIII. 537, 554.
 — hawk's, XI. 248, 249.
 BELLUNO, in Lombardy, IV. 638.
 Belly. See Abdomen.
 Belodon, fossil reptiles, XVII. 141.
 BELOMANCY, IV. 638.
 BELON (Pierre), French naturalist, IV. 638—on fishes, XII. 204; XIV. 124—on birds, XVI. 725.
 Belone, genus of fishes, XII. 264.
 Belonostomus, genus of fossil fishes, XII. 336.
 BELOOCHISTAN, IV. 639.
 Beloptera, fossil cuttle-fish, XVII. 114.
 Belostoma, genus of insects, IX. 165.
 BELPER, in Derbyshire, IV. 642.
 BELSHAM (Thomas, LL.D.), IV. 642.
 — (WILLIAM), IV. 642.
 BELSHAZZAR, IV. 642.
 BELT (Great and Little), IV. 642, 402.
 — a kind of military girdle, IV. 643.
 BEL-TEIN, or Bel-tane, IV. 643.
 BELTS, in astronomy, IV. 643, 69—in mechanics, XIV. 397—friction of, 407.
 BELTUBET, Irish town, IV. 643.
 Beluga, genus of mammalia, XIV. 228.
 See Whale.
 BELUNUM, IV. 643.
 BELUS, now Nahr Naman, river, IV. 643.
 — temple of, at Babylon, IV. 341, 344, 345.
 BELVEDERE, in architecture, IV. 643.
 — Neapolitan town, IV. 643.
 Belvisiaceæ, nat. order of plants, V. 193.
 BELZONI (Giovanni Battista), IV. 643—his explorations in Egypt, VIII. 502, 512—in Nubia, XVI. 349.
 BEM (Joseph), Hungarian general, IV. 643; XII. 24, 25.
 BEMBEA, or Bamba, IV. 643, 406.
 Bembecides, tribe of insects, IX. 195.
 BEMBO (Pietro), cardinal, IV. 643.
 Bembras, genus of fishes, XII. 282.
 Bembridge eocene rocks, XV. 211, 213.
 — Down, Isle of Wight, XXI. 861.
 BEN, or Beinn, IV. 643.
 BENACUS LACUS, now Lago di Garda, IV. 643.
 BENARES, in Hindustan, IV. 643; XVI. 301—trade of, XI. 459—sepooy insurrection at, XVI. 309—luminous meteor seen near, XIV. 631.
 BENAVIDIUS (Marcus Mantua), IV. 644.
 BENBECULA, island, IV. 644; XI. 278.
 Benbow (Admiral), his gallant exploit and death, V. 447.
 BENCH, IV. 644—Free, ib.—Queen's, ib.—Common, 645; VII. 205—bribery of the, V. 341.
 BENCHERS, IV. 645.
 BENCOOLEN, IV. 645; XX. 806—Sir T. S. Raffles, governor of, XVIII. 750.
 BEND, in heraldry, IV. 645; XI. 327—bend sinister, ib.
 BENDER, town in European Russia, IV. 645—taken by Prince Potemkin, XIX. 486.
 BENDIDEIA, festival, IV. 645.
 BENDING, IV. 645.
 Bend-knot, XIX. 90.
 Bendlets, in heraldry, XI. 327, 328.
 BENDS, in a ship, IV. 645.
 BENDY, in heraldry, IV. 645; IX. 328.
 BENE, Sardinian city, IV. 645.
 Benedetto, his work on geometrical analysis, I. 552.
 BENEDICTE, IV. 645.
 BENEDICT (St), founder of the Benedictine order of monks, IV. 645; XV. 408—his rules, IV. 646.
 — abbot of Peterborough, IV. 645.
 — XIV., pope, IV. 645.
 BENEDICTINES, IV. 645; VIII. 659—their love of learning and the arts, XIII. 387.
 BENEDICTION, IV. 646.
 Benec-Hasan, grottoes of, VIII. 504.
 — Suweyf, Egyptian town, VIII. 503.
 BENEFICE, IV. 646—number of benefices in England and Wales, VIII. 743—number of, in which the incumbents are resident and non-resident, 744—value of, ib.—in commendam, IV. 647.

BEN—BEN

BENEFICIARI, IV. 647.
 BENEFICIARY, IV. 647.
 BENEFIELD (Sebastian), IV. 647.
 BENEFIT OF CLERGY, IV. 647; VI. 764.
 — SOCIETIES, IV. 647; X. 309.
 BENEVENTO, Italian city, IV. 647; XX. 237, 258—deligation of, XVII. 243.
 Beneventum, battle of, XIX. 306.
 Benevolence, sources of, I. 383—inward delight arising from the practice of, overlooked by Bentham's followers, 396—deficient in the Asiatics, III. 750—principle of virtue placed in, XV. 561; I. 357—sentiment of, XVII. 562—in the deity, XXI. 191, 215.
 Benevolent affections, difference between them and self-love, I. 360—views of different authors on the subject, 296, 297.
 Benezet (Anthony), his opposition to the slave trade, XX. 321.
 Benfey on philology, XVII. 534.
 BENGAL, IV. 647; XI. 463, 484, 523—North-Western Provinces of, XVI. 301—Royal Asiatic Society of, III. 759—Presidency of, XI. 529—English invested with the sovereignty of, 488, 515—mutiny in the army of, in 1857, XIV. 471; XVI. 301—imports of silk from, XX. 277.
 — BAY OF, IV. 652.
 — lights, XVIII. 707.
 Bengalee era, VI. 676—language, XIII. 207.
 Bengalees, XI. 464.
 Bengel on the original text of the New Testament, XIX. 835.
 BENGUELA, African country, IV. 652; II. 227.
 Ben-himmon, XI. 532.
 Beni, river, IV. 822.
 BENICARLO, Spanish city, IV. 653.
 Benier, affair of, X. 227.
 Beni Harb, Arabian tribe, III. 348.
 — Shammar, Arabian tribe, III. 348.
 BENIN, country of Western Africa, IV. 653.
 — Bight of, II. 212, 226; XIII. 181.
 Beningsen (General), X. 145, 146, 147.
 BENISH-DAYS, IV. 653.
 BENJAMIN, youngest son of Jacob, IV. 654.
 — (of Tudela), IV. 654; X. 469.
 Ben-muich-dhui, II. 32—botany of, V. 230.
 Bennati (Dr Francesco), on the human voice, XV. 708.
 BENNET (Henry), Earl of Arlington, IV. 654.
 — (Dr THOMAS), IV. 654.
 — (Mr), on electricity, VIII. 564, 566—his electrical doubler, 614—his gold-leaf electrometer, 617—on the serpent-eater, XVI. 745—on several other birds, 767, 783, 799.
 Bennett (Mr), on mollusks of the genus Glaucus, XV. 370, 371.
 — (Prof.), his observations on the capillaries of a frog's foot, XVII. 691.
 Ben-nuts and ben-oil, V. 190.
 BENOIT (René), IV. 654.
 BENSERADE (Isaac de), IV. 654.
 BENSHEIM, IV. 654.
 BENSON (George), IV. 654.
 Bentall's broadshare plough, II. 271.
 BENT-GRASS, a species of Agrostis, IV. 655.
 — sea (*Arundo arenaria*), its use in binding sand, II. 364.
 Bentham (General), on Brunel's block-machinery, IV. 783, 784—his improvements in dockyards, VIII. 76, 77, 83, 87.
 — (George), on forms of predication in logic, XIII. 585, n.
 — (JEREMY), IV. 655—on the law of nature, I. 92, 93—on blind veneration for antiquity, 95—his objections to the word *ought*, 299—his Deontology, 300—his supposed controversy between an ancient and modern moralist, ib.—on the word *utility*, ib.—on general rules for moral conduct, 303—Mackintosh's censure on him and his followers, 304—character of him and his followers, 392, 393—his Fragment on Government, 393—his tract on the Hard Labour Bill, ib.—his Letters on Usury, ib.—his writ-

BEN—BER

ings on jurisprudence, 394—has not reached the most desirable distinction in ethical theory, 395—preaches the principle of utility with the zeal of a discoverer, ib.—confuses moral approbation with the moral qualities, ib.—his followers have overlooked the inward delight which arises from virtuous conduct, 396—his merit as a reformer of jurisprudence, 400—treats ethics too juridically, ib.—coincides with the Epicureans in some points, ib.—revolution which his style underwent, 401—Dumont's literary connection with, 402; VIII. 241, 242—his Book of Fallacies, IX. 476—criminal code of Brazil founded on his principles, V. 296—on English government and laws, VIII. 765 *et seq.*—on evidence, IX. 418—on the taking of oaths, XVI. 399—his definition of "police," XVIII. 183—on the security of property, 228—on penitentiaries, 570.
 BENTHAM (Thomas), bishop, IV. 656.
 BENTINCK (William Henry Cavendish), Duke of Portland, IV. 656.
 — (William G. F. Cavendish), Lord George, IV. 656; V. 671.
 — (Lord William), Indian newspaper press under, XVI. 204—his intervention in the affairs of Sicily, XX. 262.
 Benticles, fishes, XII. 281.
 BENTIVOGLIO (Giovanni), IV. 656.
 — (GUIDO), cardinal, IV. 656.
 BENTLEY (Richard), IV. 657; XVII. 524—his controversy respecting the Epistles of Phalaris, IV. 188; XXI. 933—his criticism on Le Clerc's edition of Menander, V. 787—his quarrel with Burman, 788—Cumberland's work on the laws of Nature revised by, VII. 579—his character as a scholar and critic, 586—on Homer—XI. 599, n.—Middleton's attacks on, XIV. 809—Cunningham's strictures on his emendations of Horace, VII. 586—Sir Isaac Newton's letters to, XVI. 207, 208.
 — oak, XXI. 270.
 Benueh, African river, X. 478—its identity with the Tchadda, ib.
 BENZOIC ACID, IV. 660; VI. 513.
 BENZOIN, IV. 660; V. 198; XX. 804.
 Bêôn, Egyptian king, VIII. 457.
 Beranger, poetry of, XVIII. 117.
 BERAR, IV. 660.
 — Rajah of, XI. 504.
 Berard, his method of manufacturing alum, II. 641—on heat, XI. 263, 273—on the solar spectrum, I. 954; XVI. 593, 594—on the polarization of radiant heat, I. 956.
 — and Co., their purified coal, X. 320.
 Beraunite, mineral, XV. 101.
 Berberidaceæ, nat. order of plants, V. 181.
 Berberine, V. 181.
 BERBERIS, a genus of plants, IV. 660; V. 181, 128, 153.
 Berbers, an African race, II. 219, 226, 566; IX. 351; XV. 594—language of, XIII. 225.
 BERBICE, IV. 660; XI. 81.
 — river in British Guiana, IV. 660; XI. 81.
 Berbir, Turkish town, X. 741.
 BERCHEM (Nicholas), painter, IV. 660.
 BERCHETT (Peter), painter, IV. 660.
 BERCHTESGADEN, town in Bavaria, IV. 660.
 BERDASH, IV. 660.
 Bere, or Bigg, II. 310—cultivated in Argyleshire, III. 526.
 — Forest, XI. 203.
 BEREYNTHIA, IV. 660.
 Berehaven, in Cork, copper mines of, XXI. 769.
 Berengar, XII. 644.
 BERENGARIANISM, IV. 660.
 BERENGARIO (Giacomo), IV. 661—his anatomical researches, II. 756, 760.
 Berengelite, mineral, XV. 124.
 BERENICE, IV. 661; XI. 391; VII. 471; XII. 773.

BER—BER

BERENICE, name of several cities, IV. 661.
 Berenice's hair, constellation, VII. 160; IV. 80.
 Beresford (Marshal), V. 609.
 BERESINA, Russian river, IV. 661; XIX. 515—Napoleon's passage of, IV. 159; X. 159.
 Beresor gold mines, XV. 230.
 BEREWICHA, IV. 661.
 Berezoff, gold mine, XIX. 550.
 BEREZOV, town in Siberia, IV. 661.
 BEREZOVSKOI, in Asiatic Russia, IV. 661.
 BERG, in Germany, IV. 661.
 BERGA, Spanish town, IV. 661.
 BERGAMO, in Lombardy, IV. 661.
 — the ancient Pergamus, a city in Anatolia, IV. 662. See Pergamus.
 BERGAMOT, IV. 662; V. 186—oil of, XVI. 496.
 Berge (F.), his entomological works, IX. 22.
 BERGEN, in Norway, IV. 662; XVI. 329—climate of, 323.
 — in Pomerania, IV. 662.
 — (De), his contributions to anatomical knowledge, II. 765.
 BERGEN-OF-ZOOM, IV. 662—fortifications and sieges of, VII. 65—fortified by Coehorn, ib. IX. 815.
 BERGERAC, in France, IV. 662.
 — (Cyrano de), his philosophical romance, II. 168.
 Bergeron, tried for an attempt on the life of Louis Philippe, X. 208.
 Berghaus, on the rivers of Asia and America, III. 730, n.
 BERGHEM, IV. 662. See Berchem.
 Bergier, on the persecution of Galileo, X. 377, n. 2.
 Berglund (G. H.), on insects, IX. 11.
 BERGMAN (Sir Torbern), IV. 662—on alum, II. 635—on the blowpipe, IV. 790, 791—on the nature of brutes, V. 702—his theory of crystallisation, VII. 546, 551—on dyeing blue, VIII. 304—on cubes of salt, XIX. 584.
 Bergmannite, mineral, XV. 75.
 Berg-mehl, or mountain-meal, XVII. 94.
 BERGMOTE, IV. 663.
 BERGOMUM, IV. 663.
 Bergstrasser (J. A. B.), his works on insects, IX. 7.
 Berhampore, mutiny at, in 1857, XVI. 302.
 BERIA, Berie, or Berry, IV. 663.
 BERING (Vitus), Danish poet, IV. 663.
 Beris, genus of insects, IX. 230.
 BERJA, in Spain, IV. 663.
 BERKELEY (George), bishop of Cloyne, IV. 663—his interview with Malebranche, I. 80—character of his genius, 163—Pope's admiration of, ib.—his sermons, ib., n.—his popularity made metaphysics fashionable, 164—chief aim of his work on Vision, ib.—his doctrine of acquired perceptions unknown to the ancients, ib.—merit of his new theory of vision not exclusively his own, 165—does not claim complete originality, 166—sense in which he employs the word *suggest*, 167 and n. 2—his object in denying the existence of matter, 168—value he attached to his system of idealism, and the impression it produced, 168, 169—his theory of vision contains a great discovery in mental philosophy, 365—his speculations not sceptical, ib.—refutation of a fallacy in his work on vision, 244—his talents and virtues praised by all, 366—his scheme for reclaiming the natives of North America, ib.—made bishop of Cloyne, ib.—his patriotism with regard to Ireland, ib.—his general principles of ethics, 367—his graceful and beautiful diction, ib., 363—his writings produced the scepticism of Hume, 368—notice of his Analyst, 650, 651, n. 1—his attack on the Newtonian calculus, IX. 676—on magnitude, XIV. 565—on abstraction, 591—on the non-existence of matter, 611, 612—theory of distance and magnitude, 573—Swift's letter to

BER—BER

- Lord Carteret regarding, XV. 552—his description of a man of pleasure, 560—on wealth, XVIII. 226, n. 1.
- BERKELEY, town in Gloucestershire, IV. 665—ship-canal, X. 680.
- vale of, X. 679, 680.
- Castle, IV. 665; X. 682—murder of Edward II. in, VIII. 682.
- Berkenhout (John), M.D., his work on natural history, IX. 8.
- BERKHAMSTEAD (Great), IV. 665.
- BERKSHIRE, IV. 665—breed of pigs, II. 355—56—population and value of property, VIII. 754—old clothing towns of, XXI. 915.
- Berlèze, his work on insects, IX. 16.
- BERLIN, IV. 666—Royal Academy of Sciences at, II. 64; XVIII. 673—observatory of, III. 819—Royal Library of, XIII. 420—occupied by the French in 1806, X. 144—Napoleon's decree at, ib.—porcelain factories at, XVIII. 436—manufactures of, 670—meeting of provincial parliaments at, 659—university, 673; XXI. 492—monument to Frederick the Great at, XVIII. 811—savings-bank, XIX. 673.
- BERME, in fortification, IV. 668; IX. 805.
- BERMUDAS, IV. 668—spiders webs in, III. 375—Berkeley's project of a college in, IV. 664.
- Berna (M.), his experiments in magnetic somnambulism, XX. 429.
- BERNADOTTE, king of Sweden and Norway, IV. 669; X. 101, 102 *et seq.*—elected crown prince of Sweden, XX. 859—his accession to the throne, 860.
- BERNARD (St), abbot, IV. 669—crusade preached by, VII. 525.
- (Dr Edward), IV. 669—his translation of part of a treatise of Apollonius, III. 301.
- (JAMES), IV. 669.
- (SIMON), IV. 670.
- (St), la Trappe, order of, in Waterford, XXI. 768, 770.
- (the Great St), mountain in Switzerland, IV. 670; II. 624; XXI. 504—Napoleon's passage of, X. 118.
- hospice of, IV. 670; II. 625—meteorological observations at, I. 944.
- (Messrs and Co.), their method of purifying coal, X. 320.
- Bernardin (Genga), on anatomy, II. 766.
- BERNARDINE (St), of Siena, IV. 670.
- BERNARDINES, order of monks, IV. 670.
- Bernardo de Brita, on Lusitanian wools, XXI. 910.
- BERNAY, in France, IV. 670.
- BERNBURG, IV. 670.
- BERNE, in Switzerland, IV. 670, 671; XX. 882—average temperature of, 889—coins of, XV. 441, 443.
- machine, IV. 671.
- BERNERA, island, IV. 671.
- BERNERS (Juliana), IV. 671; III. 162.
- Bernese Alps, XXI. 504.
- Bernesque poetry, XVIII. 111.
- BERNEVILLE (Gilebert de), IV. 671.
- BERNHARDI (August Friedrich), IV. 671.
- BERNI (Francesco), IV. 671; XVIII. 112.
- Bernicla, genus of birds, XVI. 816.
- BERNICLE, bird, IV. 671; XVI. 816.
- shell, IV. 671. See Barnacle.
- BERNIER (Nicholas), IV. 671.
- (FRANCOIS), IV. 671—his writings, I. 108, n. 2—on burying treasure in the East, XVIII. 471.
- Bernieres (M.), his large burning lens, VI. 14.
- BERNIER'S ISLAND, IV. 671.
- BERNINI (Giovanni Lorenzo), IV. 671—his style of architecture, III. 453; of sculpture, XIX. 863.
- BERNON, abbot, IV. 671.
- BERNOULLI, family of the, IV. 672; IX. 675.
- (DANIEL), IV. 675—sketch of his life and character, I. 723, n. 2—on hydrodynamics, 723; XII. 71, 72, 159—singularly happy in the sober application of analysis, 724—established the true theory of the vibrations of a

BER—BER

- musical chord, 728—on the gradation of atmospheric density, IV. 464—on the resolution of forces, VIII. 335—on the laws of motion, VI. 254—his dipping needle, XIV. 85—on probability, XVIII. 603—on the elastic curve, XX. 762—on the theory of the tides, I. 816.
- BERNOULLI (James), IV. 672—an able coadjutor of Leibnitz in illustrating the new analysis, I. 636—difficult problems in the infinitesimal analysis solved by, 645—works of, 646—his ingenious mode of treating the problem of the centre of oscillation, 719—sketch of his life and character, ib., n. 4—his formulæ for the chords of multiple arcs, II. 555—in capillary attraction, XII. 92—on probability, XVIII. 589—his problem of the elastic curve, XX. 762—his experiments on lute-strings, 763—on the calculus of variations, VI. 68.
- (JAMES), secundus, IV. 676.
- (JOHN), IV. 673—an able coadjutor of Leibnitz in illustrating the new analysis, I. 636—his judgment on the controversy between Newton and Leibnitz, 638—solution of questions by, 639—by the introduction of exponential equations, he materially improved a branch of the calculus, 645—works of, 646—was the first who fully enunciated the proposition of the equality of opposite momenta, 651—his prize essay on motion, 653—his part in the controversy respecting motion, 654, 655—simplified the science of equilibrium or statics by the principle of virtual velocities, 719—his principle styled the conservation of living forces, ib.—sketch of his life and character, ib., n. 1—quotation from his defence of Leibnitz's law of continuity, 133, n. 1—had perceived the truth of the law of continuity before communicating with Leibnitz, 258—his formula for the chords of multiple arcs, II. 555—his barometer, IV. 454—his singular boast as to the demonstration of the inverse problem of centripetal forces, VIII. 363—Keill and Brooke Taylor's challenge to, IX. 675—on hydrodynamics, XII. 72—his intimacy with Euler, IX. 372; with Leibnitz, 675—on projectiles, XVIII. 67, 68, 69—on the calculus of variations and exponentials, VI. 68.
- (JOHN), secundus, IV. 676.
- (JOHN), tertius, IV. 676.
- (NICHOLAS), IV. 674.
- (NICHOLAS), secundus, IV. 676.
- BERNSTADT, in Silesia, IV. 677.
- Bernstorff, Danish family, VII. 742.
- BEROE, zoophyte, IV. 677; XXI. 1000, 1001.
- BERGEA, IV. 677.
- Beroidæ, family of zoophytes, XXI. 1001.
- BEROSUS, IV. 677—dial of, VII. 772.
- Berra (Signor) on Lombardy, XIII. 651, 652.
- BERRE, French town, IV. 677.
- Berres (Joseph), his microscopical anatomy, II. 769.
- BERRETINI da Cortona (Pietro), Italian painter, IV. 677.
- BERRETONI (Nicolo), painter, IV. 677.
- Berri (Duke of), assassination of, X. 181—funeral, 182.
- (Duchess of), X. 206, 207.
- Berry, in botany, V. 138—trees and shrubs producing, XVII. 768.
- French province, X. 277.
- Head, XXI. 311.
- Berryer (M.), X. 197 *et seq.*, 223—on the credit mobilier, XV. 290.
- BERSARI, IV. 677.
- Berthier (General), X. 108 *et seq.*
- Berthierite, mineral, XV. 119.
- Berthier's analysis of ironstones, XII. 540.
- BERTHOLLET (Claude Louis), IV. 677—first to employ oxymuriatic acid in bleaching, I. 589; IV. 758, 759—on the composition of the atmosphere, 180—his work on dyeing, VIII. 274—his gunpowder from chlorate of potash, XI.

BER—BET

- 158—on the action of light on metallic oxides, XIII. 459—mesmerism rejected by, XX. 419.
- BERTHOLLETTIA, genus of plants, IV. 677; V. 192, 299.
- Berthon (Rev. E. L.), his life-boat, XIII. 447.
- BERTHOUD (Ferdinand), IV. 678.
- Bertin (M.), on diamagnetism, XIV. 30, 31; XVI. 675.
- BERTINORO, IV. 678.
- Bertoloni (G.), his works on insects, IX. 15.
- Bertolotti, his work on the flea, IX. 18.
- Bertou (M.), on Tyre, XXI. 404.
- Bertram (Mr), his mode of welding iron beams, XX. 195.
- Bertrand (General), X. 161, 164.
- (M.), his account of Deleuze's work on animal magnetism, XX. 425, 426, 427; his work on, 428.
- Bertsch (M.), his microscopic photographs, XIV. 801.
- Bervie, in Kincardineshire, XII. 437; XIII. 89.
- Berwens, mountains in Wales, VII. 735.
- BERWICK (the Duke of), IV. 678.
- (NORTH), IV. 681—Law, XI. 177.
- ON TWEED, IV. 681—diminished mortality in, owing to sanitary improvements, XIX. 604.
- SHIRE, IV. 678—system of feeding horses, II. 340—system of farming in, XIX. 798—agricultural statistics, 796, 797, 798—population, 799.
- BERYL, IV. 682; XV. 88; XVII. 623—specific gravity of, XII. 88—dichroism in, XVI. 666—in Brazil, V. 293. See Emerald.
- Berytus. See Beyrouth.
- Beryx, genus of fishes, XII. 279—of fossil fishes, 343.
- Berzeliite, XV. 96.
- BERZELINE, mineral, IV. 683; XV. 118.
- BERZELITE, mineral, IV. 683; XV. 105.
- BERZELIUS (Baron Jan Jacob), IV. 683; I. 969, n. 3—on electro-chemical decompositions, 968—on alum, II. 635—his analysis of bone, 827; of marrow, 828—eminence of his school as analysts, I. 969—made no single discovery of commanding importance, 969, n. 3—his arrangement of minerals, XV. 67—first published an account of sealing-wax, XXI. 799—his method of increasing the power of a galvanic battery, 611.
- BESANÇON, French city, IV. 684; VIII. 114—canal of, X. 244—population, 277—Academy of, XXI. 491.
- BESANT, or Bezant, gold coin, IV. 685; VII. 71.
- in heraldry, XI. 325.
- Beskow (Bernhard von), XIX. 700—on the literature of Sweden, 696.
- BESOZZI (Ambrogio), painter, IV. 685.
- BESSARABIA, IV. 685; XIX. 521—wine made in, XXI. 886.
- BESSARION (John), archbishop of Nice, IV. 685.
- BESSEL (F. Wilhelm), IV. 685—his early labours, I. 848—his *Fundamenta Astronomiæ* and other works, ib., 849—his observations on the star 61 Cygni, 864; IV. 96—on the proper motion of the stars, 82, 83—on the planet Jupiter, 91 Saturn, 92—on the pendulum, I. 853—on comets, 856, 857, 858—his connection with the Königsberg Observatory, III. 819—on the parallax of fixed stars, I. 864.
- Bessemer (H.), his account of his system for manufacturing iron and steel, XII. 555—remarks on that system, 574.
- BESSI, IV. 685.
- Bessus, XVII. 434—Darius killed by, XIII. 768—vanquished and put to death, 769.
- BESTAIL, or Bestial, IV. 685.
- BESTIARI, IV. 685.
- Besztercebanya, town in Hungary, XVI. 155.
- Betancourt (General de), his design for a roof, XIX. 394.

BET—BEY

- Betancourt (M.), his experiments on the force of steam, XX. 557.
- Betanzos, Spanish town, X. 373.
- BETCHUANA, nation in Southern Africa, IV. 685.
- BETEL, IV. 685—betel-nut, V. 214—betel-pepper, XVII. 404.
- Betel-nut island, XVIII. 516.
- BETHABARA, IV. 686.
- BETHANY, IV. 686—residence of Lazarus, XIV. 329.
- BETHEL, IV. 686.
- Bethell (Mr), his method of preserving timber, V. 173; VIII. 213, n.; XXI. 279.
- BETHESDA, IV. 686.
- BETH-HORON, IV. 687.
- BETHLEHEM, IV. 687; XII. 758—wine made at, XXI. 886.
- Hospital, London, XIII. 673.
- (star of), plant, V. 150, 212.
- BETHLEHEMITES, a kind of monks, IV. 687.
- BETHPHAGE, IV. 687.
- BETHSAIDA, IV. 687; XVII. 186.
- BETHSHAN, IV. 687.
- BETHULIA, IV. 687.
- BETHUNE (Maximilien de), IV. 687. See Sully.
- town in France, IV. 687.
- (Sir H. Lindsay), XVII. 428.
- BETHYLUS, genus of birds, IV. 687; XVI. 748.
- genus of insects, IX. 193.
- BETLIS, or Bitlis, in Turkish Armenia, IV. 688.
- Beton, artificial concrete for walls, XI. 221.
- BETROTHMENT, IV. 688; V. 347.
- Betta, genus of fishes, XII. 290.
- BETTERTON (Thomas), actor, IV. 688; XXI. 171, 173, 174.
- BETTINELLI (Xavier), IV. 688.
- Betting-houses, law for the suppression of, X. 395.
- BETULA, a genus of plants, IV. 689; V. 208.
- Betulaceæ, nat. order of plants, V. 208.
- BETULEIUS (Sixtus), IV. 689.
- BETWAH, river in Hindustan, IV. 689.
- BEUDANT (François-Sulpice), IV. 689.
- Beudantite, mineral, XV. 102.
- Beukels, his discovery of the mode of curing herring, XI. 583.
- BEUTELSPACH, town in Wirttemberg, IV. 689.
- BEUTHEN, in Silesia, IV. 689.
- Bevan (Dr Edward), on the honey-bee, IV. 588.
- BEVEL, IV. 689—bevel-angle, ib.—bevel-wheels, XIV. 396—bevellings, in ship-building, XX. 184.
- BEVELAND (North and South), IV. 689.
- BEVERAGE, IV. 689.
- BEVERIDGE (William), bishop, IV. 689—his work on canon law, VI. 189.
- BEVERLEY, town in Yorkshire, IV. 690; XXI. 959—minster of, its architectural merits, III. 481, 482, 483, 516.
- in Massachusetts, IV. 690.
- (JOHN OF), archbishop of York, in the eighth century, IV. 690.
- BEVILE, in heraldry, IV. 690.
- BEVIN (Elway), musician, IV. 690.
- BEWDLEY, town in Worcestershire, IV. 690.
- BEWICK (Thomas), IV. 690—on British birds, XVI. 733, 818—his wood-engravings, XXI. 904.
- (John), his wood-engravings, XXI. 904.
- BEWITS, in falconry, IV. 690.
- Bex, saltspring at, XXI. 531.
- Bey (Linant), on the sources of the White Nile, XVI. 269.
- IV. 690—massacres of the Egyptian Beys, VIII. 489, 492.
- BRYAH, river in India, IV. 690.
- Beybars, VIII. 484.
- Beyer on rare books, IV. 709.
- Peacock, and Co., goods locomotive engine made by, XX. 615.
- BEYKANEER, in Hindustan, IV. 690, 509.
- BEYRA, or Beira, IV. 691.

BEY—BIB

BEYRAMICH, in Asia Minor, IV. 691.
 Beyrichia, fossils, XVII. 101.
 BEYROUT, or Beirout, anciently Berytus, in Syria, IV. 691; VI. 746; XX. 905—reduced by the allies in 1840, V. 668.
 BEYS (Giles), printer, IV. 692.
 BEZA (Theodore), IV. 692—his life of Calvin, VI. 107, 109, 111—his New Testament, IV. 698; XIX. 837—Codex Bezae, 838—on original sin, XXI. 205.
 Bezant, gold coin, IV. 685; VII. 71.
 BEZIERS, French city, IV. 692.
 BEZOAR, IV. 693—bezoar goat, XIV. 211.
 Bezoardica glauca, mollusk, XV. 356.
 Bezout (Stephen), notice of his life and writings, I. 712, n. 1—on problems in seamanship, XX. 5, 9.
 BHADRINATH, in Hindustan, IV. 693.
 Bhageerettee, or Ganges, X. 400.
 Bhanras, Nepalese tribe, XVI. 144.
 Bhars, Indian tribe, XVII. 18.
 Bhascara, Hindoo algebraist, II. 487.
 BHATGAN, in Hindustan, IV. 693.
 Bhatta, Indian tribe, XI. 91, 466; XVIII. 691.
 BHEELS, IV. 693; XI. 92, 466—mutiny of, in 1857, XVI. 314.
 Bhooj, VII. 598.
 Bhootias, Nepalese tribe, XVI. 144.
 Bhoral, animal in Tibet, XXI. 247.
 BHURTPORE, in Hindustan, IV. 693—sieges of, XI. 505, 508; XII. 701.
 BIAFRA, country in Africa, IV. 694.
 —bight of, IV. 694; II. 212.
 BIALYSTOCK, IV. 694.
 Biancamano (Umberto), XIX. 641.
 BIANCHI (Francesco), IV. 694.
 —and Neri, Italian faction, XII. 649.
 BIANCHINI (Francis), IV. 694—on the planet Venus, 65.
 Bianco, Cape, XX. 245.
 BIAR, Spanish town, IV. 694.
 BIARCHUS, IV. 694.
 Bias, one of the seven sages of Greece, IV. 694.
 —of the mind, IV. 694.
 Biaxal crystals, discovery of, I. 913—theory of, 905. See Crystals.
 Bib, fish, XII. 269.
 Bibars, sultan, XVII. 197.
 Bibbiena, Italian comic writer, VIII. 148.
 BIBERACH, town in Wurtemberg, IV. 694.
 BIBIENA (Ferdinando, Galli), IV. 694.
 Bibio, genus of insects, IX. 230.
 BIBLE, IV. 694—Alexandrian MS., II. 474—variations in the copies of Moses' writings as to antediluvian chronology, III. 267—on the principle on which the Bible ought to be studied and understood, I. 455—Apocrypha, III. 297; XIX. 833; XII. 761—divination by means of, IV. 717—first edition printed with moveable metallic types, 708; XVIII. 529—Castellios' Latin and French translation, VI. 321—Bowyer's Greek Testament, V. 252—R. Boyle's exertions for translation and diffusion of, 259—its sufficiency as a guide to salvation maintained by the dissenters in 1772, 474—concordances of the, VI. 66; VII. 228, 523—the canon, VI. 188; VIII. 371—Walton's polyglot, IV. 707; XXI. 695—Douay edition of, VIII. 113—chronological discrepancy of the Hebrew, Samaritan, and Greek texts, VI. 668—Clermont's MS. of Paul's Epistles, 765—deutero-canonical books, VII. 761—Sir W. Drummond on the historical books of the Old Testament, VIII. 195—its perusal first permitted and afterwards prohibited by Henry VIII., 706—opinions of the Ebionites concerning the canon, 369—Erasmus's edition of the New Testament, IX. 322—Jerome's, or the vulgate version of, XII. 728—Galileo on Science and Scripture, X. 377, n. 2—Geddes's translation of the, 444—Grotius's annotations on the, XI. 69, 70—Origen's Hexapla, 364—the Septuagint, IV. 698; XII. 768; XVII. 519—Kennicott's Hebrew Bible, XIII. 64—collation of MSS., ib.—Kitto's Pictorial Bible, 104—Geneva Bible, 127

BIB—BIE

—Lachmann's New Testament and Vulgate, 147—Luther's translation of, 729—Magyar versions of, XII. 19—Mohammed had no real acquaintance with, XV. 299—Rabbinical Bible, XIX. 835—in reference to philology, XVII. 518, 519—Pagninus's translation of, 44—palimpsest MSS. of, 208—polyglot editions, XVIII. 266; XXI. 951—poetical books of, XVIII. 97—Popish opinions respecting, 337—Biblia Pauperum, or Poor Man's Bible, 523, 533, Plate; IV. 708; Mazarine Bible, XVIII. 529—early English editions, 537—incorrect English editions, 543—Hebrew editions, XIX. 835—ancient Valdian copy of the New Testament, XXI. 510—Valdo's exertions to translate and circulate, ib.—Tyndale's, 400—Wetstein on the various readings of the New Testament, 845—his New Testament, ib.—Wycliffe's translation of, 946; extract from his version, VIII. 795. See Old and New Testament, Holy Scriptures, Septuagint, Targum, Theology, Revelation.
 BIBLE SOCIETIES, IV. 703—in Dublin, VIII. 225 London, XIII. 666—New York, XVI. 230—American Bible Society, XXI. 422.
 BIBLIANDER (Theodore), IV. 704.
 Biblical criticism, works on, XIX. 828.
 BIBLIOGRAPHY, IV. 704—booksellers' marks or signs, V. 30—form of, and manner of writing ancient books, VIII. 42—Dibdin on, 7—Dryander's Catalogue of Sir Joseph Banks' Library of Natural History, 201; IV. 714—Gesner's Bibliothéque Universelle, X. 597. See Books, Libraries, Printing.
 BIBLIOMANCY, IV. 717.
 Bibliomania, IV. 714.
 BIBLIOTHECA, IV. 717.
 Bibliothèque Universelle, X. 597.
 Biblis, genus of insects, IX. 208.
 Bibrionia, genus of fishes, XII. 304.
 Bicanere, IV. 690.
 BICE, or Bise, IV. 717.
 BICESTER, or Bisseter, in Oxfordshire, IV. 717.
 BICHAT (Marie-François-Xavier), IV. 717—his anatomical works, II. 767; III. 73—on fat, II. 788—on the arteries, 790—on the veins, 793, 794, 796—on the capillary system, 796, 798—on the exhalants, 802—on the lymphatics, 804—on the lymphatic glands, 806—on the nerves, 806 *et seq.*—on the ligaments, 823, 824—on cartilage, 832—on fibrocartilage, 832—on the skin, 834—on the mucous membrane, 836, 837—on the serous membrane, 839—on the synovial membrane, ib.—on the heart, III. 64.
 Bichromate process, in photography, XVII. 550.
 Bickford's Devonshire system of irrigation, XII. 614.
 Bicuspid teeth, in man, III. 25.
 BIDAL, or Bidale, IV. 718.
 BIDASOA, river, IV. 718; XX. 488.
 Bidder (Mr), iron-bridge erected by, XII. 600—on railways, XVIII. 798.
 BIDDING PRAYER, IV. 718.
 BIDDLE (John), Socinian writer, IV. 718.
 Biddle's scarifier, II. 272.
 BIDDOMAHs, or Biddumas, African tribe, IV. 719—visited by Dr Overweg, II. 214—inhabit the islands of Lake Tchad, XXI. 80.
 BIDEFORD, in Devonshire, IV. 719.
 BIDENS, genus of plants, IV. 719.
 —genus of birds, XVI. 745.
 BIDENTAL, IV. 719.
 BIDET, IV. 719.
 BIDLEI, Spartan magistrates, IV. 719.
 BIDLOO (Gottfried), IV. 719—his anatomical publications, 764.
 Bidone (George), on hydrodynamics, XII. 75, 152, 153.
 BIDPAI, or Pilpay, Hindu author, IV. 719.
 BIDSCHOW (New), in Bohemia, IV. 719.
 Bieberite, mineral, XV. 98.
 BIEDENCOPF, IV. 719.
 Biela's comet, IV. 76, 94.

BIE—BIN

BIELEFELD, in Westphalia, IV. 719.
 BIELITZ, in Silesia, IV. 719.
 BIELLA, IV. 719.
 Bienne (Lake of), XX. 889.
 Biennial plants, XI. 750; V. 77.
 BIER, IV. 719.
 Biesbosch, lake in Holland, XI. 581.
 Biferno, river, XX. 238.
 BIFRONS, IV. 719.
 Big, species of barley, V. 320—its loss in malting, 324.
 BIGA, or Bigæ, ancient chariot, IV. 719; VI. 422.
 BIGAMY, IV. 719.
 BIGBONE-LICK, a district in Kentucky, IV. 720; XIII. 69.
 BIGGAR, in Lanarkshire, IV. 720.
 BIGGLESWADE, in Bedfordshire, IV. 721.
 BIGHORN RIVER, in North America, IV. 721.
 BIGHT, IV. 721.
 BIGNON (Jerome), IV. 721.
 —(M.), on the policy of Napoleon, X. 128—on Napoleon's opposition to the Czar's views upon Turkey, 153—his motion on Poland, 205.
 BIGNONIA, a genus of shrubs, IV. 721; V. 200.
 Bignoniaceæ, nat. order of plants, V. 200.
 BIGOT, IV. 721.
 Bija Gannita, Hindoo treatise on algebra, II. 487, 488.
 BIJANAGUR, IV. 721.
 BILBAO, or Bilbao, Spanish city, IV. 721—sieges of, in 1835 and 1836, XX. 478, 479—river, 488.
 Bilberry, V. 198.
 Bilbeys, Egyptian town, VIII. 498. See Belbeis.
 Bilbilis, VI. 66.
 BILBOES, IV. 722.
 BILDERDYK (Willem), IV. 722.
 BILDULGERID, or Bled-el-jereede, IV. 722, 771.
 Bile, II. 782; VI. 520, 521—composition and functions of, XVII. 666—of insects, IX. 52.
 BILFINGER (Georg Bernhard), IV. 722.
 BILGE, of a ship, IV. 722—of a cask, ib.
 Bilin, polishing slate of, XVII. 94, 588.
 Bilphin, colouring matter of bile, XVII. 666.
 BILL, different applications of the word, IV. 722, 723—of lading, 722—in Parliament, ib.; XVII. 301—in commerce, IV. 722—distinction between real and accommodation bills, XV. 471—bad effects of discounting those of long dates, ib.—discount charged on, by the Bank of England, 472—discounted by the Bank of France, 490.
 Billberg (J. G.), his entomological works, IX. 15.
 Bill-book, in book-keeping, V. 19.
 BILLERICAY, town in Essex, IV. 723.
 BILLET, in heraldry, IV. 723; XI. 330.
 BILLETING, IV. 723.
 BILLETON, East Indian island, IV. 723.
 BILLIARDS, IV. 723.
 Billings (R. W.), on the architectural remains of Scotland, III. 503.
 —(Capt.), his voyage of discovery, II. 465.
 Billingsgate market, XIII. 664—fish sold at, IX. 649, n. 3.
 Billingsley's boring machine, V. 43.
 BILLON, IV. 724; XVI. 353.
 —(Thomas), II. 745.
 BILLS, of Exchange, IV. 722; V. 19; VII. 488—distinction between them and paper-money, XV. 446—history of, IX. 442—fictitious, 429; VII. 489—negotiation of, 443—laws of, 445.
 —Exchequer, IX. 447.
 —of mortality, IV. 722; XV. 600.
 BILMA, African town, IV. 724.
 BILSAH, town in Hindustan, IV. 724.
 BILSON (Thomas), bishop, IV. 724.
 BILSTON, in Staffordshire, IV. 724.
 Biluchi tribes, XX. 306.
 Bina, in Sumbawa, XX. 806.
 Bimana, II. 774.
 BIN, IV. 724.

BIN—BIR

BINACLE, IV. 724.
 BINARY ARITHMETIC, IV. 724—measure, 725; system in France, XXI. 811—number, IV. 725—compounds of minerals with oxygen, XV. 61—combinations of metals, in thermo-electricity, XXI. 650.
 Binchester, Roman station at, VIII. 267.
 Bindweed, V. 201.
 BINGEN, IV. 725.
 BINGHAM (Joseph), IV. 725.
 —in Nottinghamshire, IV. 725.
 BINGLEY, in Yorkshire, IV. 725; XX. 958.
 —(Mr), on the ox, XIV. 214.
 BINK (Jacob), IV. 725.
 Binkendon (Capt.), on fossil foot-prints, XVII. 130.
 Binney (Mr), on fossil plants, V. 235, 236.
 —on the minerals of Lancashire, XIII. 179.
 —(Hon. Horace), on Washington's Farewell Address, XXI. 759.
 Binning, his account of Persia, XVII. 421 *et seq.*
 Binny, freestone of, XIII. 497.
 Binocular perspective, XVII. 449.
 —telescopes, XXI. 183.
 BINOMIAL, IV. 725; II. 530; IX. 285.
 Binotheris, Egyptian king, VIII. 454.
 BINTANG, island, IV. 725.
 Biobio, river in Chile, VI. 543.
 BIOGRAPHY, IV. 725; XI. 536—Boswell as a writer of, V. 64.
 BIOLOGY, IV. 726; II. 748.
 BION, of Smyrna, IV. 726.
 —Borysthenites, IV. 726.
 Biot (M.), his life and researches, I. 916—character of his researches, 917—on the transmission of sound, II. 99, 101—on the rotatory action of fluids, I. 910—his ascent in a balloon, II. 181, 184—his epigrammatic description of Cavendish, I. 931—his allegation in reference to Galileo, IV. 449, n. 2—on the law of the tints in biaxal crystals, I. 914—on barometrical measurements, IV. 465—on chromatics, VI. 652 *et seq.*—on ancient Chinese books, VII. 244—on electricity, VIII. 531, 552, 556, 580—on the transmission of heat, XI. 261; I. 946—his connection with the measurement of the French arc of meridian, 837—on electrical light, VIII. 546, 547—his explanation of Lichtenberg's electrical figures, 606—on mirage, XIV. 683—on magnetism, 7, 23, 26, 27, 63—his artificial magnets, 71—his account of the meteoric stones of L'Aigle, 632—on optics, XVI. 538, 627, 650, 651, 676, 680 *et seq.*; I. 910, 917—his formula representing the relation of the pressure and temperature of steam, XX. 564—on electro-chemical decomposition, XXI. 628.
 Biotite, mineral, XV. 78.
 Bioxiphus, Egyptian deity, XI. 386.
 Bipartiti, section of insects, IX. 85.
 BIPES, genus of reptiles, IV. 726; XIX. 39.
 BIQUADRATE, IV. 726.
 BIQUADRATIC EQUATION, IV. 726; II. 520—Parabola—Power—Root, IV. 726.
 BIR, or Beer, town in Asiatic Turkey, IV. 726, 589.
 Birbeck (Mr), on the state of the small agriculturists in France, VII. 433.
 BIRBOOM, in Hindustan, IV. 726, 651.
 BIRCH (Dr Thomas), IV. 726—his collection of works on human mortality, XV. 602.
 —(Mr), on hieroglyphics, XI. 409, 431—on Chæremont's work on hieroglyphics, 411.
 —(Mr), on ancient pottery, XVIII. 431.
 —IV. 726; V. 208; XVII. 759, 765—bark, in dyeing, VIII. 308—oil of, XVI. 496—its wood used for bobbins, XII. 438—as a timber-tree, XXI. 278.
 —order of plants, V. 208.
 BIRD (William), IV. 727; XXI. 15.
 —IV. 727—structure of birds, XVI. 734—as articles of food, IX. 762—plumage, XVI. 735—poisonous species,

BIR—BIS

- XIV. 439—fossil, XVII. 154—number known, 631—injuries from, XXI. 548. See Ornithology.
- Bird (Dr Golding), on magneto-electricity, XXI. 648—his decomposing battery, 620.
- (Mr), on weights and measures, XXI. 799, 802.
- (Mr), painter, Turner's kindness to, XXI. 387.
- Bird-catching spiders, III. 377.
- Bird-cherry, XVII. 763.
- BIRD-LIME, IV. 727.
- BIRDS, in heraldry, IV. 727; XI. 333.
- Bird's astronomical instruments, III. 808.
- BIRDS'-EYE VIEW, IV. 727.
- tobacco, XXI. 295.
- BIRDS'-NESTS, edible, IV. 727; III. 125; XII. 710; VII. 48.
- BIREN, IV. 727; III. 214; XIX. 481, 482.
- Birge (Juste), XIII. 553.
- Birger Jarl, founder of Stockholm, XX. 706.
- BIRGUS, a species of crab, IV. 727.
- BIRKBECK (George), IV. 727—his share in the establishment of mechanics' institutions, XV. 824.
- BIRKENHEAD (Sir John), IV. 727; XVI. 181.
- town in Cheshire, IV. 727—docks, XIII. 519.
- BIRKET-EL-KEROUN, the ancient lake Moeris, IV. 729; VIII. 429.
- MARIOUTH, the ancient Palus Mareotis, IV. 729; II. 469; VIII. 429 and n. 1.
- Birket-el-Saba, viaduct, XII. 609, 610.
- Birkmyre's estimate of the production of the precious metals, in different countries, XVIII. 461, n.
- BIRMAH, IV. 729. See Burmah.
- BIRMINGHAM, IV. 729—Soho, near, V. 246—riots at, in 1791, 539; XVIII. 514—roof of the theatre of, VI. 266—Deaf and Dumb Asylum at, VII. 686—hardware manufactures of, VIII. 729—Birmingham and Worcester canal, XXI. 928—process of making gun-barrels at, XI. 96—roof over the joint railway station at, XIX. 399—gun-trade of, XI. 100—Leland's notice of, XIV. 284—steel-pens manufactured at, XVII. 400—post-office statistics, XVIII. 416—cruelties practised in the borough jail of, in 1853, 569—London and Birmingham Railway, 760, 774, 794; Birmingham and Gloucester, 795; XX. 928—canal, XXI. 738—rent of land in the neighbourhood of, 739—population, ib.
- BIRON (Armand de Gontault), Lord of, IV. 732.
- (CHARLES DE GONTAULT), IV. 732.
- (Lord), V. 404.
- BIRR, IV. 732. See Parsonstown.
- BIRS NIMRUD, IV. 732, 343.
- Birs, Swiss river, XX. 888.
- Birt (Mr), on atmospheric waves, XIV. 651.
- Births, in England, in 1852, VIII. 756—rate per cent in England, XV. 649—illegitimate, in various European states, IV. 494; and in large towns, ib.—proportion of males to females, XVIII. 588—registration of, 831—their number dependent on the number of deaths, 348—in Scotland, XIX. 800—Switzerland, XX. 890.
- Birthwort order of plants, V. 205.
- plant, V. 127, 154.
- Birtley, salt-spring at, VIII. 266.
- BISACCIA, Neapolitan city, IV. 732.
- BISACUTA, IV. 732.
- Bisayan islands, XVII. 512.
- BISCARA, town in Algeria, IV. 732.
- BISCAY, province in the north of Spain, IV. 732—language of, XIII. 214—wines of, XXI. 884. See Cantabria.
- BAY OF, IV. 733.
- BISCEGLIA, Neapolitan city, IV. 733.
- Bischof, on rocks, XV. 138, 142 *et seq.*—on pseudomorphism in rocks, 152.
- BISCHOP, or Biskop (John de), IV. 733.

BIS—BIX

- BISCHWILLER, French town, IV. 733.
- BISCUIT, IV. 733—manufacture of, for the navy, 378.
- in pottery and porcelain manufacture, XVIII. 442.
- BISHAREEN, IV. 733.
- BISHOP, IV. 733—difference between the bishops of apostolic and of later times I. 526—universal bishop, XI. 33—identical with presbyter, XVIII. 482, 487—English, VIII. 743—their title to a seat in the House of Lords, 767—French, X. 243, 267—Godwin's catalogue of English bishops, 691. See Episcopacy.
- BISHOP AUCKLAND, IV. 734, 236—castle of, VIII. 267.
- BISHOPING, IV. 735.
- Bishoprics, English, VIII. 743—Irish, XII. 530—early Scottish, XIX. 749.
- BISHOP'S COURT, IV. 734.
- Bible, the, IV. 703.
- CASTLE, town in Shropshire, IV. 734.
- STORTFORD, town in Hertfordshire, IV. 735.
- WALTHAM, town in Hampshire, IV. 735.
- WEARMOUTH, in Durham, IV. 735. See Sunderland.
- BISIGNANO, Neapolitan city, IV. 735.
- Bi-Situn, sculptures on, XVII. 433.
- BISLEY, in Gloucestershire, IV. 735.
- Bismark (Count), on the military character of the French, III. 642.
- BISMILLAH, IV. 735.
- BISMUTH, IV. 735; VI. 496; XV. 65, 114—cupreous, 121—poisonous nature of the sub-nitrate of, XIV. 434—magnetism of, 27—specific gravity of, XII. 88—in Cornwall, VII. 407—cohesion of, XX. 757.
- Bismuth-ochre, XV. 112.
- Bismuthic silver, XV. 121.
- Bismuthine, mineral, XV. 119.
- Bismuthite, mineral, XV. 107.
- BISOMUM, IV. 735.
- BISON, IV. 735; XIV. 214; XVII. 632—fossil, 170.
- BISSAGOS, African islands, IV. 735; V. 760.
- BISSAT (Patrick), IV. 735.
- Bisset (Charles), on fortification, IX. 816.
- BISSEXTILE YEAR, IV. 735; VI. 77.
- BISTOURY, surgical instrument, IV. 735; XX. 821, 827.
- BISTRE, IV. 735—drawing in, VIII. 173.
- Bisulphuret of hydrogen, VI. 477—of carbon, 478.
- BISUTUN, IV. 735.
- BISZTRITZ, in Transylvania, IV. 735.
- BITCHE, in France, IV. 735.
- BITHYNIA, province in Asia Minor, IV. 736—monarchy of, XV. 412—coins of, XVI. 374.
- Bithynus, genus of insects, IX. 153.
- BITLIS, IV. 736. See Betlis.
- Bitolia, town in Turkey, XV. 415.
- Bitoma, genus of insects, IX. 142.
- Biton, VI. 762.
- BITONTO, IV. 736.
- Bittacus, genus of insects, IX. 177.
- Bitter spar, XV. 92.
- BITTERFELD, in Saxony, IV. 736.
- BITTERN, bird, IV. 736; XVI. 799.
- Bittersweet, V. 201.
- Bitterwood, V. 189.
- BITTS, IV. 736.
- BITUMEN, IV. 736; XV. 123—B. Judaicum, III. 762—on the shores of the Dead Sea, 761—specific gravity of, XII. 89—elastic, XV. 124; in Derbyshire, VII. 755—its use in building, in Assyria, III. 501, n.—fountains of, at Hit, XI. 549—in Persia, XVII. 422.
- Bituminous cements, XX. 715.
- shale, II. 638; XV. 83—employed in the manufacture of alum, II. 637, 640.
- BIVALVE, IV. 736; XV. 340, 341—fossil bivalves, XVII. 105, 106.
- BIVOUC, IV. 736.
- Bixacea, nat. order of plants, V. 183.

BIZ—BLA

- BIZARI (Pietro), IV. 737.
- BIZERTA, or Benzert, in Tunis, IV. 737.
- BLABY, in Leicestershire, IV. 737.
- BLACK (Dr Joseph), IV. 737—his discovery of latent heat, I. 760, 926; XI. 269; of specific heat, I. 926—his discovery of fixed air, 925—his intimacy with Dr Hutton, 928—contrasted with Hutton, ib.—death, ib.—his experiment illustrative of the theory of balloons, II. 170—sketch of his life and discoveries, I. 925—928—his patronage of, and intimacy with, Watt, 866, 867; XXI. 774—his blow-pipe, IV. 790—his portable furnace, X. 357.
- (William), on the influence of electricity on fermentation, V. 319, 329—on kiln-drying malt, 323—his description of fermentation, 329.
- colour, IV. 740—dyeing of, VIII. 304, 319—varieties of, in mineralogy, XV. 59—people of that colour, VII. 222.
- Act—Acts, IV. 740.
- FOREST, in Suabia, IV. 740, 360—in Württemberg, XXI. 938, 939, 940.
- MAIL, IV. 740—levied on wool merchants, XXI. 908.
- River, in Wisconsin, XXI. 893.
- SEA, IV. 740; IX. 385. See Euxine.
- thorn, XVII. 760.
- Black-ball in wheat, II. 306.
- Black-band, iron ore, XII. 540.
- BLACK-BIRD, IV. 740; XVI. 751.
- BLACK-BOOK of the Exchequer, IV. 740. See England.
- BLACK-BOOKS, IV. 740.
- BLACK-CAP, IV. 740; XVI. 756.
- BLACK-CHICK, IV. 740; IX. 762; XVI. 791—shooting of, XX. 225.
- Black-death in the fourteenth century, XXI. 944 and n. 2.
- BLACK-GUARD, IV. 740.
- BLACK-LEAD, IV. 740. See Plumbago.
- BLACK-LETTER, IV. 740.
- BLACK-MONKS, IV. 740.
- Black-quarter, disease in animals, XXI. 557.
- BLACK-TIN, IV. 746—wadd, ib.—whytlof, ib.
- BLACKALL (Offspring), prelate, IV. 746.
- BLACKBURN, in Lancashire, IV. 746.
- Blackett's locomotive engine, I. 883.
- Blackfaced breed of sheep, II. 347.
- BLACKFRIARS, IV. 740.
- Bridge, London, III. 409; V. 357; XIII. 676—centre employed for, VI. 379, 381—laying the foundations, XX. 722.
- Blackgang Chine, Isle of Wight, XXI. 861, 862.
- BLACKING, IV. 747.
- BLACKLOCK (Thomas), IV. 747, 774.
- BLACKMORE (Sir Richard), IV. 747.
- Blackness, treaty of, XIX. 762.
- BLACKSTONE (Sir William), IV. 747—on the jurisdiction of the Court of Queen's Bench, 644—on barrettry, 472—on blasphemy, 754—on corporations, VII. 413, 414—on barristers and sergeants, 465; IV. 473—on inns of court, XII. 384—on the office of chancellor, VI. 411—on Magna Charta, 427—on the government and laws of England, VIII. 757 *et seq.*—on the use of the Norman language by lawyers, 794—on entails, 816—on the militia, XV. 7—on feudal law, IX. 525—on the game laws, X. 395—on nobility, XVI. 280—on fire-ordeal, 701—on prescription, XVIII. 508.
- BLACKWALL (Anthony), IV. 748.
- (Mr), his observations on spiders, III. 376—77.
- Blackwater, river in Cork, VII. 371; XII. 505; XXI. 408, 769.
- in Galway, X. 389.
- Blackwell (T.E.), his experiments on weirs, XII. 76, 121, 125, 126.
- (ALEXANDER), IV. 749.
- (Kenyon), on the iron trade of Britain, XII. 574.
- (THOMAS), IV. 748.

BLA—BLA

- Blackwood (Captain), his survey of the coasts of New Guinea, IV. 263.
- Blackwood's Magazine, establishment of, XXI. 877—Professor Wilson's connection with, ib., 878—James Wilson's contributions to, 876; Dr George Wilson's, 874; Dr Moir's, XV. 309, 310; Lockhart's, XIII. 545—Tytler's, XXI. 413, 414—Hogg's contributions to, and connection with, XI. 558.
- BLADDER, IV. 749—anatomy of the urinary bladder in man, III. 68—in the mammalia, 113—in reptiles, fishes, and birds sometimes wanting, ib.—diseases of, in the domestic animals, XXI. 570—stone in the, ib. See Calculus, Lithotomy.
- (swimming or air), in fishes, XII. 225, 284.
- Bladder-nut order of plants, V. 189.
- tree, XVII. 762.
- Bladderwort order of plants, V. 203.
- BLADE, IV. 749.
- BLADEN (Martin), IV. 749.
- Bladenoch, distillery at, XXI. 864.
- BLADUM, IV. 749.
- Blaeberry, V. 198.
- Blaes, valves of the lacteals discovered by, II. 762.
- BLAEU (William), printer, IV. 749.
- Blagden (Dr), on aurora borealis, IV. 246—on fire-balls in the air, IX. 587.
- BLAGRAVE (John), mathematician, IV. 749.
- Blaikie's garnet doublet, XIV. 774.
- Blain, disease, XXI. 564.
- Blaine (Mr), on veterinary science, XXI. 579.
- BLAINVILLE (Henri-Marie Ducrotay de), French naturalist, IV. 749—his classification of animals, III. 190—defects of his nomenclature, 183—on the class infusoria, 195—on the mollusca, XV. 319 *et seq.*—on the annelides, XI. 304, 306, 307—on the dentition of the mole, XVI. 450—on the homologies of the teeth, 482—on zoophytes, XXI. 983, 985, 988 *et seq.*
- (M.), his musical scale or mode, XV. 708.
- BLAIR (Dr Hugh), IV. 749—on Addison's supposed misstatement of Locke's doctrine concerning secondary qualities, I. 272—on beauty, IV. 540—on Ossian's poems, XVII. 5, 6.
- (JAMES), IV. 750.
- (JOHN), Scottish author, IV. 751.
- (JOHN), Scottish chronologer, IV. 751.
- (ROBERT), author of *The Grave*, IV. 751—his poetry, XVIII. 124.
- (Dr Robert), his experiments with a view to improve achromatic telescopes, I. 751, 893, n. 2; II. 93; XVI. 535—his aplanatic telescopes, II. 94; XIV. 781; XVI. 585—his method of correcting spherical aberration, 573—on the spectrum, 584—his fluid object-glasses, XXI. 121.
- BLAIR-ATHOLE, in Perthshire, IV. 751—larch trees of, XVI. 101; XXI. 275.
- Blair-Drummond moss, reclaiming of, II. 362.
- BLAISE, a military order, IV. 751.
- BLAKE (Robert), English Admiral, IV. 751; XI. 576.
- (Mr), on exchange, IX. 434, 441.
- (WILLIAM), engraver, IV. 753.
- Blanc (Louis), his system of communism, VII. 212—his work on the organisation of labour, ib. *et seq.*—his epitome of St Simonianism, 211—accused of insurrection, X. 238.
- (MONT), IV. 753; II. 624; XIX. 675—ascents of, II. 627—Mr Auldjo's account of his ascent, 628—Saussure's observations on its summit, IV. 467—glaciers of, X. 633, 634—Coleridge's Hymn to, VII. 112.
- (Le), on French money, XV. 434, 436.
- BLANCH-HOLDING, in law, IV. 753.
- BLANCHARD (Jacques), painter, IV. 753.
- aëronaut, II. 177—his journey

BLA—BLI

across the British Channel, 178—the first constructor of parachutes, 179.
 Blanchard (E.), his entomological works, IX. 22.
 — (Laman), his Life of L. E. L., XIII. 182.
 BLANCHE-FERME, IV. 753.
 BLANCHING, in coinage, IV. 753.
 — of vegetables, V. 106; XIII. 460—of celery, XI. 744.
 BLANCO, African cape, IV. 753; XV. 594; XXI. 364.
 Blancourt on ductile glass, X. 658.
 BLANDFORD-FORUM, in Dorsetshire, IV. 753.
 BLANE (Sir Gilbert), physician, IV. 753—on the diminution of sickness in the navy, XVI. 106.
 BLANES, Spanish city, IV. 753.
 BLANK, IV. 753—coin, *ib.*—verse, *ib.*
 BLANKENBURG, IV. 753.
 BLANKET, IV. 753—tossing in a, *ib.*
 BLANKOF (Jan Teunisz), IV. 753.
 BLAPS, genus of insects, IV. 754; IX. 130.
 Blapsides, tribe of insects, IX. 130.
 BLARNEY, in Ireland, IV. 754.
 BLASPHEMY, IV. 754.
 — against the Holy Ghost, IV. 754.
 Blast, XII. 546—hot blast, 547, 548.
 Blast-furnaces, X. 355, 359; XII. 545, 546.
 Blastema, XVII. 651.
 BLASTING, IV. 754—screw, 757.
 Blastoides, fossil echinoderms, XVII. 99.
 BLATTA, genus of insects, IV. 757; IX. 156—want of symmetry in some of the species, XII. 225, *n.*
 BLAYE, in France, IV. 757; X. 632.
 BLAZONRY, IV. 757.
 Bleachers, diseases of, XIV. 443.
 BLEACHING, IV. 757—Berthollet's process with oxymuriatic acid, I. 589—introduction of that process into Britain by Watt, XXI. 776—pre-eminence of Ulster in, XIV. 285—of rags in paper-making, XVII. 254, 255—bleaching-powder, VI. 468; IV. 761.
 Bleak, fish, angling for, III. 161—mock pearls made from the scales of, VI. 407; IX. 334.
 BLED (or BELED) EL-JEREEDE, country in Africa, IV. 771, 722.
 Blee (Robert), his safety-bucket, XIII. 448.
 Bleeding. See Blood-letting.
 BLEEDING OF A CORPSE, IV. 772.
 Bleek (Dr), on African languages, XIII. 227, 228.
 Bleeker (Dr), on the botany of Java, XII. 703.
 BLEIBERG, town in Illyria, IV. 772.
 Bleinierite, mineral, XV. 106.
 Bleking, VI. 241.
 BLEMYES, an Ethiopian tribe, IV. 772.
 BLENDE, a mineral, IV. 772; XV. 121—mining of, in Belgium, IV. 625.
 Blendes, minerals, XV. 121.
 BLENHEIM, village in Bavaria, IV. 772; battle of, V. 448; IV. 515; IX. 368.
 — House, IV. 772; XXI. 904.
 Blenkarn (John), his treatise on timber-trees, XXI. 268—on oak timber, 271.
 Blenniidae, or Blennoids, family of fishes, XII. 308-9; of fossil fishes, 346.
 Blennius, genus of fishes, XII. 309.
 Blennophis, genus of fishes, XII. 309.
 BLENNORRHEA, IV. 772.
 BLENNY, fish, IV. 772; XII. 308—viviparous, *ib.*
 BLEPHARIS, genus of fishes, IV. 772; XII. 297—of insects, IV. 772.
 Blepsias, genus of fishes, XII. 283.
 Blessings, temporal, erroneously regarded as a proof of divine favour, I. 479.
 BLETONISM, IV. 772.
 Bleuland on the structure of the oesophagus, II. 836—on the mucous membrane, 836, 837, 838—on the lymphatics, 804.—on the villi of the ileum, III. 61.
 Blicher (S. Steensen), Danish author, XIX. 695.
 Bligh (Captain), long abstinence of his

BLI—BLO

crew from food, III. 180—governor of New South Wales, IV. 272—his voyages for conveying the bread-fruit tree to the West Indies, V. 301.
 Bligh, in Australia, IV. 282.
 BLIGHT, disease of plants, IV. 772—American, XI. 716.
 BLIND, IV. 772—number of, in Britain and Ireland, VIII. 749—basket-making by the, IV. 488—Bernoulli on teaching mathematics to, 672—asylums for the, in Dublin, VIII. 224—numerous in Egypt, 422—writing-case for the, XVIII. 504—printing for the, 553—proportion of, in Europe and America, *ib.*—in Scotland, XIX. 800. See Blacklock, Blindness.
 BLIND-COAL, or Anthracite, IV. 782. See Anthracite.
 — pit, VII. 125.
 Blind-worms, XIX. 40.
 BLINDING, an ancient mode of punishment, IV. 782; II. 5.
 BLINDNESS (periodical), IV. 782.
 — colour, VII. 153, 637.
 — snow, IV. 826. See Blind.
 Blistering plasters for the domestic animals, XXI. 556, *n.* 6.
 Blisworth cast-iron bridge, XII. 588.
 Bloaters, Yarmouth herring, XXI. 953.
 BLOCH (Mark Eliezer), ichthyologist, IV. 782.
 Blochairn boiler-plates, XX. 175.
 Blochius, genus of fossil fishes, XII. 338.
 BLOCK, IV. 782; XIV. 401.
 — books, IV. 706, 708; XVIII. 523.
 BLOCK-MACHINERY, IV. 783; I. 879; V. 695; VIII. 83.
 BLOCKADE, in war, IV. 786—influence of, on neutral states, XVI. 158.
 Blocking-course, in architecture, III. 508; V. 739.
 Blocks, erratic, evidences of a deluge, VII. 723—on the Jura, XIII. 21. See Boulders.
 BLOCKZYL, IV. 788.
 BLOEMART (Abraham), painter, IV. 788.
 BLOIS, in France, IV. 788; XIII. 635.
 BLOND (J. Christopher le), painter, IV. 788—his method of printing in colours, XIV. 734.
 — kind of lace, XIII. 142.
 Blondeau's marine barometer, IV. 458.
 BLONDEL, troubadour, IV. 788.
 — (DAVID), historian, IV. 788—his disproof of the story of Pope Joan, XII. 786.
 — (FRANÇOIS), architect, IV. 788; XI. 107.
 BLONDUS (Flavius), IV. 788.
 BLOOD, IV. 788; II. 778—globules of the, 779; XIV. 762—its phenomena out of the body, *ib.*—iron in, VI. 489—chemical constitution of, II. 781—in what arterial differs from venous, 782—as manure, 407—its character in different classes of animals, III. 171—chemical composition and properties of, VI. 521; XVII. 664—its use in clarifying, VI. 755—effect of unoxxygenated, on the brain, VIII. 181—used as food, IX. 758—specific gravity of, XII. 89—blood-cells, XVII. 650—tubes, 653—formation of, from alimentary substances, 660—blood-glands, 660—function of, 664—extravasation of, 690—changes it undergoes in the lungs, 663—passage of fluid from, to be transformed into the tissues, 663—its use in refining sugar, XX. 794—of reptiles, XIX. 13. See next article, Blood-letting, Blood-vessels, &c.
 — (circulation of the), XVII. 661; II. 772, 773; III. 170—hinted at by Mondino in the 14th century, II. 756—partially announced by Servetus, 760; XX. 61; by Columbus, II. 761; by Cæsalpinus, 761; and fully demonstrated by Harvey, 761—organs of, in man, III. 3, 63; and in brutes, 112—in the arachnides, 367, 369—in the crustacea, VII. 539—insects, IX. 48—annelides, XI. 290, 291—fishes, XII. 244—

BLO—BLU

crustacea and mollusca, XV. 356, 357, 331, 320—serpents, XIX. 48; other reptiles, 13—zoophytes, XXI. 973—Léwenhoeck's observations on, XIII. 349—course of the blood through the heart, III. 65.
 BLOOD, avenger of, IV. 789.
 — horse, XI. 633.
 — hound, IV. 789; XI. 764.
 — religious uses of, IV. 788.
 — (the), disease in animals, XXI. 568.
 — (THOMAS), IV. 789.
 — whyte, or wyte, IV. 789.
 Blood-letting, in surgery, XX. 830—more rarely resorted to than formerly, *ib.*—bleeding of the domestic animals, XXI. 555, *n.* 6.
 Blood-root, order of plants, V. 212.
 Blood-spavin, XXI. 559.
 — a shot of, in sheep and cattle, XXI. 574.
 BLOODSTONE, mineral, IV. 789; XV. 69.
 Blood-vessels, Aristotle and other ancient writers on, II. 750 *et seq.*—structure of arteries, 789; and veins, 792—vessels of the ear, III. 47; lips, 48; tongue, 49; larynx, 51; brain, 56; stomach, 60—colon and liver, 62; lungs, 66; kidneys, 67; uterus, 71; and placenta, 72—umbilical, *ib.*—comparative anatomy of, 112—in the crustacea, VII. 539—in fishes, XII. 224—their diseases in the domestic animals, XXI. 574. See Aneurism, Entomology, Ichthyology, Ornithology, &c.
 Bloom, in leather, XIII. 307, 308.
 BLOOMFIELD (Robert), IV. 789.
 — (Dr S. T.), his edition of the New Testament, XIX. 837.
 Blooms and bloomeries, in iron manufacture, XII. 558, 559, 538.
 Bloreheath, battle of, VIII. 690.
 Blossie (M. de), his work on reformatories, XXI. 298.
 Blossom, protection of, in fruit-trees, XI. 707.
 — and blossoming of plants. See Flower, Flowering.
 BLOUNT (Charles), IV. 790; XIII. 358—his translation of the life of Apollonius of Tyana, XVII. 543.
 — (Sir Charles), VIII. 713.
 — (Edward), printer, XVIII. 538.
 — (SIR HENRY), IV. 790.
 — (Martha), friend of Pope, XVIII. 334, 335.
 — (THOMAS), IV. 790.
 — (SIR THOMAS POPE), IV. 790.
 BLOW (Dr John), IV. 790.
 Blow-holes of the whale, XIV. 232, 238.
 BLOW-PIPE, IV. 790—use of, in mineralogy, XV. 63—Berzelius' Essay on the use of the, IV. 684—anatomical, 794—how to keep up a continued blast with the, XVIII. 76—known to the Sidonians, XX. 269.
 BLOWING, IV. 794—of flowers, *ib.*, see Flower and Flowering—of tin, 795.
 — of glass, IV. 795; X. 663.
 BLOWING-MACHINES, IV. 795; XVIII. 83—water-machine, XII. 183. See Iron-manufacture, Smelting.
 Blowing-off, in marine steam-engines, XX. 649.
 Blown, disease of cattle, XXI. 566.
 Bloxam (Mr), on escapements, VII. 10, 12—his escapement, 13—his dipeidoscope, VIII. 37.
 BLUBBER, IV. 798; XIV. 238; XVI. 493—its use as manure, II. 301, 407.
 BLÜCHER (Lebrecht von), Prussian field-marshal, IV. 798; V. 619; X. 143, 144 *et seq.*; XVIII. 656, 657—his combinations at the Katsbach and Laon, XXI. 712.
 BLUE, colour, IV. 798—in chromatics, VI. 644, 646 *et seq.*—varieties of, XV. 59—for printing, XVIII. 556—dyeing of, VIII. 301, 318—cyanometer, VII. 606.
 — (JOHN), variety of fluorspar, IV. 798; XV. 93.
 — VITRIOL, IV. 798.
 — Mountains, in Jamaica, XII. 679

BLU—BOC

680; height of, XVII. 644—in Oregon, XVI. 705; XXI. 420—in Australia, IV. 281.
 Blue Nile. See Bahr-el-Azrek.
 — and green faction, XIII. 28.
 — river. See Yang-tse-Kiang.
 Blue-bird, XVI. 756.
 Blue-gum, timber tree, XXI. 278.
 Blue-throat, bird, XVI. 755.
 BLUEING of metals, IV. 798.
 BLUFF-HEADED, IV. 799.
 — form of elevated land, XII. 361, 362.
 Bluhme (Dr), his views on the Justinian code, VI. 745.
 BLUMENBACH (Johann Friedrich), M.D., IV. 799—on albinos, II. 447—his classification of animals, III. 183—his classification of the human races, IX. 343—on zoophytes, XXI. 990.
 Blundell (Lieut.), killed in a duel, VIII. 232.
 BLUNDERBUSS, IV. 799.
 BLUSHING, IV. 799.
 Blythe (Walter), his work on husbandry, II. 257; VIII. 723—on draining land, 130, 132.
 Bo, islands, IV. 799.
 BOA, genus of serpents, IV. 799; XIX. 59, 61—teeth of, XVI. 431—peculiar to South America, XVII. 634—urine, 667—hibernation of *B. murina*, XII. 62.
 BOADICEA, IV. 799; V. 378.
 BOAR, term in the manège, IV. 799.
 — male swine, IV. 799—wild, *ib.*; XIV. 197; its teeth, XVI. 467; their chemical composition, 418—in India, XI. 455—Ethiopian boar, *ib.*; III. 105—masked boar, teeth of, XVI. 467.
 Board of Trade, code of naval signals by, XX. 25—their supervision of steam-vessels, 651.
 BOAT, IV. 800—of skin, 346—of wicker-work, 487—boat-signals, XVI. 109—of papyrus, XVII. 246—guard-boat, XI. 74—rowing, racing, and pleasure-boats, XX. 139.
 BOAT-BILL, bird, IV. 800; XVI. 798.
 BOATSWAIN, IV. 800; XVI. 104—boat-swain's mate, IV. 800.
 Boa Vista. See Bonavista.
 Bob of a pendulum, XVII. 383; VII. 5.
 Bobac, in zoology, XIV. 189.
 BOBBIN, IV. 800; XIII. 142, 143, 144; XX. 282, 283, 511; XXI. 785.
 Bobbinet, manufacture of, VII. 451—machine, XIII. 143, 144; XVI. 338—smuggled into France, X. 253.
 BOBBING for eels, IV. 800.
 Boblaye (M.), on the geology of Greece, XI. 11.
 BOBLINGEN, town in Wirtemberg, IV. 800.
 BOBSTAYS, IV. 800.
 BOCA-CHICA, IV. 800.
 Bodge, a district in Vendée, in France, XXI. 534.
 BOCATRENT, Spanish town, IV. 800.
 BOCCACCIO (Giovanni), IV. 800—one of those who introduced a taste for literature into Italy, I. 15—sums that have been paid for first editions of his works, IV. 710, *n.* 2; XVIII. 532—his account of Dante, VII. 647—his commentary on the Divina Commedia, 648—Petrarca's intercourse with, XVII. 497, 498, 499.
 BOCCALE, liquid measure, IV. 803.
 BOCCALINI (Trajan), IV. 803.
 BOCCARELLA, IV. 803.
 Bocchus, XIII. 16.
 Bocchoris, Egyptian king, VIII. 463.
 BOCCONE (Paolo), Sicilian naturalist, IV. 803.
 BOCHART (Samuel), IV. 803—on Tarshish, XXI. 27—on Syria, XX. 901.
 Bocher (Joan), VII. 483.
 BOCHUS, or Boch (John), IV. 804.
 BOCHNIA, in Galicia, IV. 804.
 BOCHUM, in Westphalia, IV. 804.
 Bockhold (John), anabaptist, II. 742.
 BOCKING, in Essex, IV. 804.
 BOCK-LAND, IV. 804.

BOC—BOH

- Bocydium, genus of insects, IX. 170.
 Bodaert's Elenchus Animalium, III. 183.
 Boddington (Mr), his account of the singular effects of lightning, VIII. 601.
 — oak, XXI. 270.
 BODE (Johann Elert), IV. 804—astronomical annals edited by, III. 815—his catalogue of stars, IV. 80.
 Bodenite, mineral, XV. 90.
 Bodensee. See Constance, Lake of.
 BODERIA, or Bodotria, ancient name of the Firth of Forth, IV. 804.
 BODIN (Jean), IV. 804; I. 27—specimen of his views as a philosophical politician, ib.—his Treatise de la Republique, ib., n. 4, 28, n. 1—absurdity of some of his notions, 28—his credulity on the subject of witchcraft, ib.—his merits, ib., n. 5—his opinion of Machiavel, 233.
 BODKIN, IV. 804.
 BODLE, IV. 804.
 Bodleian library at Oxford, XIII. 395; XVII. 35; IV. 804—F. Junius's MSS. bequeathed to, XIII. 20.
 BODLEY (Sir Thomas), IV. 804; XIII. 389.
 BODMER (R.), his improvement on the safety-valves of steam-boilers, XX. 617.
 BODMIN, a Cornish town, IV. 805.
 BODONI (Giambattista), IV. 805.
 Boduni or Dobuni, VIII. 73.
 Body, definition of, X. 506—elementary bodies, VI. 437—Plato's notion of, XVII. 806—primary and secondary qualities of, XIV. 570, 571.
 — human, electricity of, VIII. 571—development of, XIV. 425—its chemical changes, 617—its chemical composition, IX. 755, n. 768—spontaneous combustion of, XIV. 427.
 BOECE, or Boethius (Hector), IV. 805. See Boyce.
 Boeckh, on the public economy of the Athenian State, IV. 217—on a Greek inscription, 218, n.—on the money-lenders of Athens, XII. 427.
 BOEDROMIA, Athenian festival, IV. 805.
 BOEHM, or Behmen (Jacob), IV. 805; XV. 757.
 Boehmer on canon law, VI. 190.
 Bœhtlingk on the Turanian languages, XVII. 535.
 BŒOTIA, IV. 805; XI. 12, 18; XXI. 177—monarchy of, XV. 412—coinage of, XVI. 371.
 Boëo, cape, XX. 246.
 BOERHAAVE (Hermann), IV. 806; XIV. 461—on the distribution of heat, I. 758—on the merits of the Hon. Robert Boyle, V. 259—his doctrines as taught in the schools, VII. 574—on the nerves, II. 814—on the poison of the viper, XIX. 45—his admiration of Sydenham, XX. 893.
 Boers, in Natal, XV. 803, 804—at Cape of Good Hope, X. 712.
 BOETHIUS, IV. 807; I. 323; XIV. 455; XII. 640; XVII. 520—his Consolations of Philosophy translated by Alfred the Great, II. 481.
 BOG OF GIGHT, town in Scotland, IV. 808.
 Bog-iron ore, XV. 108.
 BOGALCUND, in Hindustan, IV. 808.
 Bogarmiteæ, heretics, IV. 808.
 Bogbutter, XV. 124.
 Boghead coal, X. 414, 434.
 BOGNOR, town in Sussex, IV. 808; XX. 839, 840.
 Bogoda, genus of fishes, XII. 275.
 BOGODUCHOW, IV. 808.
 BOGOMILI, heretics, IV. 808.
 BOGOTA, (Santa Fé de), IV. 808.
 Bogs, reclamation of, II. 361.
 — Irish, XII. 507; XIII. 81, 91, 92—in Kerry, 74—of Allen, 81, 91; XXI. 286—in Leitrim, XIII. 328—London-derry, 684—Kilkenny, 84—Roscommon, XIX. 421—Wicklow, XXI. 858.
 Bog-spavin, XXI. 559.
 BOHADDDIN, or Boh-a-Eddyn, IV. 811.
 Bohadschia, genus of zoophytes, XXI. 986.

BOH—BOL

- BOHEA, black tea, IV. 812—tea-hills, in China, XXI. 84.
 Boheman (C. H.), his entomological works, IX. 23.
 BOHEMIA, IV. 812, 309; X. 582—geology, 583—Cambrian and Cambro-Silurian rocks of, XV. 196, 197—upper Silurian rocks of, 198—monarchy of, 412—heights of mountains in, XVII. 643—conquered by the Poles, XVIII. 138—wines of, XXI. 886.
 BOHEMIAN, or Moravian brethren, IV. 812.
 Bohemian versions of the Bible, IV. 702—language, XIII. 214—glass, XVIII. 669.
 Bohemond, VII. 317.
 Boheyret-Maryoot (Lake), VIII. 429.
 Böhm (Dr), on the sun's rotation, IV. 87.
 Bohn, his works on medical jurisprudence, XIV. 423.
 Bohnenbergs's electroscope, XXI. 620.
 BOHOL, or Bool, island, IV. 813.
 BOIARDO (Count Matteo Maria), IV. 813—poetry of, XVIII. 110.
 BOII, people of Ancient Gaul, IV. 814—gave name to Bavaria, 515.
 Boileau (Major), on the Indus, XII. 378.
 BOILEAU-DESPREAUX (Nicolas), IV. 814—on the dramatic unities, VIII. 150, 152—poetry of, XVIII. 116.
 Boilers, for hot-houses, XI. 722—multitubular, for locomotives, I. 885—prevention of smoke in, XX. 354, 355—steam-boilers, historical notice of, 586—parts and appendages of, 589—pressure of steam in, 601—horse-power of, 602—boilers at Saltaire Mills, 604—classification of steam-boilers, 615—different kinds of, ib., 616, 617—efficiency of steam-boilers, 632; strength, 634; ruptures and explosions, ib., 651—deposits in, 635—economy in heating, 648—scaling of, 649—marine, 651—tubular, ib.—vertical tube-boiler, ib.—sheet-flue, ib.
 BOILING, IV. 814—phenomena of, XX. 554—boiling-point, IV. 814; XX. 555, 649; XXI. 222; its variation at different heights, IV. 467—bending wood by, XII. 811—loss sustained by articles of food in boiling, IX. 766.
 — SPRINGS, IV. 814; X. 598; XII. 201, 202.
 Boissduval (J. A.), his entomological works, IX. 16.
 BOIS-LE-DUC, Dutch city, IV. 814.
 — (Francis le), physician, XIV. 461.
 Bois-Reymond (M. du), on the electricity of the nerves and muscles, XVII. 672—on voltaic electricity, XXI. 663.
 BOISSARD (Jean Jacques), IV. 814.
 Boitard (M. T.), his Manual of Entomology, IX. 22.
 Bolvin (Madame), on the muscular fibres in the uterus, III. 71.
 BOJADOR, African Cape, IV. 815.
 Bojanus, his Memoir on the Merycotherium, XVI. 467.
 Bojë (C. Johannes), Danish author, XIX. 695.
 Bokenham (Mr), on vacations to the officers of the post-office, XVIII. 416.
 BOKHARA, IV. 815; V. 757.
 Bokharians in Russia, XIX. 523.
 BOL (Ferdinand), Dutch painter, IV. 815.
 BOLABOLA, or Borabora, one of the Society Islands, IV. 815.
 BOLBEC, in France, IV. 815.
 Bolca, Monte, fossil fishes of, XII. 351, 354, 355; XVII. 127, 128, 640—geological period of, 128.
 BOLE, mineral, IV. 815; XV. 83.
 Boleophthalmus, genus of fishes, XII. 396.
 Boleosoma, genus of fishes, XII. 277.
 Bolero, Spanish dance-tune, XXI. 288.
 Boleslas, kings of Poland so named, XVIII. 138, 139, 140.
 BOLEYN (Anne), IV. 815. See Anne Boleyn.
 Bolgars, in Russia, XIX. 522.
 BOLI, town in Natolia, IV. 815.
 BOLINGBROKE (Henry St John), viscount, IV. 815; V. 454; XX. 872, 873—his character of Marlborough, VI. 714—his

BOL—BON

- friendship with Pope, XVIII. 332—his attack upon Pope, XXI. 729—Warburton's View of his philosophy, 730.
 Bolis, or Bolide, meteor, XIV. 684.
 Bolitophila, genus of insects, IX. 228.
 BOLIVAR (Simon), IV. 817—Bolivia named after, 821—his constitution for Bolivia, 834; and its consequences, 835—his ambitious schemes, ib.—his proceedings in Peru, XVII. 468.
 BOLIVIA, IV. 821; II. 705—British consul in, VII. 337—plateau of, XVII. 593—west coast rainless, 615—produce of the precious metals in, XVIII. 461, 462; XV. 248—height of mountains, XVII. 644, 645—maps of, VI. Plate.
 BOLL, corn measure, IV. 838—in different counties of Scotland, XXI. 809.
 BOLLANDUS (John), IV. 838.
 BOLLARDS, IV. 838.
 Bollman (Dr), his method of distilling charcoal, XI. 154.
 BOLOGNA, IV. 838—legation, XVII. 243—Institute of, II. 66—medical school of, 755—library of, XIII. 413—silk manufacture of, XVII. 243—university of, XXI. 444, 448.
 — (GIOVANNI DI), IV. 839—character of his sculpture, XIX. 863.
 BOLOGNESE SCHOOL of painting, IV. 839; III. 710; XVII. 72.
 BOLOGNIAN STONE, IV. 839; XIII. 456; XV. 94.
 BOISCHALA REKA, river, IV. 839.
 BOLSCHERETSK, IV. 839.
 BOLSENA, town and lake in Italy, IV. 839; XVII. 242.
 BOLSOVER, in Derbyshire, IV. 839—its limestone as a building stone, XX. 712.
 BOLSWERT (Boetius-Adam), engraver, IV. 839; VIII. 809.
 — (SHELTIUS), IV. 839.
 BOLT-ROPE, IV. 839.
 Boltenia, genus of mollusks, XV. 334.
 BOLTER, IV. 839.
 BOLTING-MILL, IV. 839.
 BOLTON (Edmund), IV. 839.
 — iron-works, XII. 153, 154.
 Boltonite, mineral, XV. 82.
 BOLTON-LE-MOORS, town in Lancashire, IV. 839—free library of, XIII. 406—cellar dwellings in, XVIII. 196.
 Bolzano, V. 241.
 Bomangoi, III. 166.
 Bomarsund, fortress, destruction of, XIX. 502.
 Bomati, his work on insects, IX. 22.
 BOMB, IV. 840; XI. 139, 141. See Shell.
 — KETCH, V. 4. See Bomb-vessel.
 — VESSEL, or ketch, IV. 840; X. 385.
 BOMBARDIER, IV. 840.
 BOMBARDO, musical instrument, IV. 840.
 BOMBASINE, IV. 840.
 BOMBAST, IV. 840.
 BOMBAX, genus of plants, IV. 840; V. 184.
 BOMBAY, V. 1; XI. 463—presidency of, 529—Elephanta Isle near, VIII. 628—meteorological observations at, XIV. 688.
 Bombelli (Raphael), his discoveries in mathematics, I. 588—on a MS. of Diophantus, ib., n.—on algebra, II. 485.
 Bomberg (Daniel), his Hebrew Bible, IV. 695.
 Bombinator, genus of reptiles, XIX. 81.
 BOMBUS, V. 4.
 — genus of humble bees, V. 4; IX. 201.
 Bombycilla, genus of birds, XVI. 750.
 Bombycites, section of insects, IX. 212.
 Bombyliariæ, family of insects, IX. 233.
 Bombylius, genus of insects, IX. 233.
 BOMBYX, genus of moths, V. 4; IX. 213.
 Bomilcar, VI. 284.
 BOMONICÆ, V. 4.
 Bon, African Cape, XXI. 364.
 BONA (Giovanni), cardinal, V. 4.
 — town in Algeria, V. 4—massacre at, II. 572.
 — DEA, Roman divinity, V. 4.
 — FIDES, in law, V. 4—mobilia, ib.—notabilia, ib.—vacantia, ib.

BON—BON

- BONALD (Louis Gabriel Ambroise), viscomte de, V. 4—his estimate of the merits of Condillac, I. 177.
 BONAPARTE, or Buonaparte, V. 5. See Napoleon.
 — (Carlo), prince of Musignano—his work on ornithology, XVI. 731.
 — (Jerome), X. 154.
 — (Joseph), X. 107, 168—king of Naples, 141; XX. 261, 264—king of Spain, X. 150; XX. 472; XXI. 823.
 — (Louis), king of Holland, XI. 579.
 — (Lucien), X. 115, 141.
 Bonar bridge, tidal phenomena at, XVI. 58.
 Bonardi (Abbé), on anonymous books, IV. 712.
 BONARELLI, della Rovere (Count Guid' Ubaldo), V. 5.
 BONASONE (Giulio), engraver, V. 5.
 BONASSUS, V. 5. See Bison.
 BONAVENTURE (St), V. 5.
 BONAVISTA, island, V. 5; XXI. 545.
 BOND (John), V. 5.
 — (Mr), on magnetism, XIV. 3—his discovery regarding the enlarged meridian, IX. 744—on navigation, XVI. 6.
 — (G. P.), on the perturbations of the small planets, IV. 91.
 — in building, V. 732, 738; VII. 327, n.—bond timbers, V. 734, 739, 747.
 BONDAGE, V. 5—by the forelock, ib.
 Bondager, IV. 680.
 BONDMAN, V. 5.
 BONDON, African kingdom, V. 6.
 Bondsorff (G.), his works on insects, IX. 7.
 BONE (Henry), enamel painter, V. 6.
 — black, XII. 665.
 — caves, XVII. 639; XV. 215.
 — oil, II. 413.
 BONE-DUST, V. 6; II. 264, 299—as applied to turnips, 317; VI. 524.
 Bone-spavin, XXI. 557, 558.
 Bonelli (F. A.), his works on insects, IX. 11, 15.
 — (Prof.), on birds, XVI. 731.
 Bonelli's electro-magnetic loom, XXI. 643, 789.
 BONES, extraction of ammonia from, II. 722—phosphorus from, VI. 478—composition of, IX. 758; XVII. 156—Dumhamel's experiments on their growth, VIII. 233—specific gravity of, XII. 89—their hollow form an instance of divine wisdom, XX. 766. See Ossification.
 — of the dead, V. 6.
 — V. 6 (HUMAN), II. 824—knowledge of Celsus and Galen as to their anatomy, 752, 753—their forms, structure, and development, 824—chemical analysis of, 827; XVII. 156—their vessels, II. 827—their junctions, 830—of the skeleton, III. 4—of the ear, 46—phosphate of lime in, XVII. 654, 655.
 — OF THE LOWER ANIMALS; the mammalia, III. 74, 75—of birds, 83; XVI. 735—of reptiles, III. 86—of fishes, 89; XII. 207—fossil (see Palæontology)—of the ear, IV. 98, 99—proportion of hard and soft matter in, XVII. 156—chemical composition, ib.—diseases of, XXI. 557.
 — as manure, II. 411, 264, 299; VI. 524—fermented, II. 300—as a top dressing for pastures, ib.—dissolved, 411—analysis of, ib. See Bone-dust.
 Bo'ness, in Linlithgowshire, V. 56—coal wrought there in the twelfth century VII. 116.
 BONET (Theophilus), V. 6.
 BONFADIO (Jacopo), V. 6.
 BONFINI (Anthony), V. 6.
 BONFRERE (James), V. 6.
 BONGARS (Jacques), V. 6.
 BONI, or Bony, a state in the island of Celebes, V. 7; VI. 361.
 — (Abbé), on editions of the classics, IV. 711.
 BONIFACE (nine popes of that name), V. 7—collection of decretals by Boniface VIII, VI. 189.
 — (St), the apostle of Germany, V. 7.
 BONIFACIO, town and strait, Corsica, V. 7; VII. 417.

BON—BOO

Bonito, fish, XII. 294.
 Bonjol (Mons.), on the electricity of the air, VIII. 588—on electro-chemical decomposition, 597—his improvement in galvanic batteries, XXI. 618.
 Bonjour (M.), his bleaching establishment, IV. 759.
 Bonn, in Germany, V. 7—university of, XVIII. 673; XXI. 492.
 — (Andrew), on the membranes, II. 765—on the connection between the mucous membrane and the skin, 838.
 BONNEFONS (Jean), Latin poet, V. 8.
 BONNER (Edmund), bishop of London, V. 8; VIII. 710, 711.
 BONNET (Charles), V. 8—his commentary on Leibnitz's theory of a sufficient reason, I. 131, n. 2—was the first to assert that there is a scale of beings from the Deity downwards, 134 and n. 3, 149—his zeal for the scheme of necessity, *ib.*, n. 5—his speculations on human nature, 170—agreement of his opinions with those of Hartley, 171—on ants, III. 261, 262, 264—his works on insects, IX. 4—on vegetable monstrosities, XV. 504.
 — or Bonet (Theophilus), V. 6.
 — in fortification, IX. 803.
 BONNEVAL (Claude Alexandre, Comte de), V. 9.
 BONNYCASTLE (John), V. 10.
 — (Charles), on magnetism, XIV. 9, 41.
 BONONCINI (Giovanni Maria), V. 10; XIII. 697.
 BONONIA, V. 10. See Bologna and Bologne.
 — a town in Pannonia; also a town in Bulgaria, V. 10.
 Bonpland on the *Gymnotus electricus*, VIII. 575.
 Bonsdorffite, mineral, XV. 88.
 Bontius on birds, XVI. 726.
 Bonus system, in life assurance, XII. 412.
 BONVINCINO (Alessandro), V. 10.
 Bony. See Boni.
 BONZES, V. 10—in Siam, XX. 233, 234.
 Boobies, birds, XVI. 814.
 Boodh Gayah, X. 442.
 BOODROOM, town in Anatolia, V. 10.
 Boedt (Boëtius de), XIII. 451.
 BOOK, V. 10—constituent parts of, IV. 705—in manuscript before the origin of printing, 706—books of the ancients, 707—different forms of letters in modern, *ib.*—differences in editions, *ib.*—early printed, 708—rare, 709—classical, *ib.*—anonymous and pseudonymous, 711—condemned and prohibited, 712—dictionaries and catalogues, 713—classification of, 715—mode of whitening and cleaning, 771—number of books published annually in Britain, V. 31; VII. 356—only one in eight reaches a second edition, 356—libraries entitled to copies of every book published in their respective kingdoms, XIII. 374—clay books, XVIII. 431—Japanese books, XII. 695—Mexican, II. 684—number printed in Russia, XIX. 532. See Bibliography, Copyright, Libraries, Printing.
 — of Common Prayer, XIII. 517.
 BOOKBINDING, V. 12—gilding of book-covers, X. 627.
 BOOK-KEEPING, V. 15—system followed in Savings-banks, XIX. 667.
 BOOKSELLING, V. 30—limited profits of the business, VII. 356—book fairs of Leipsic, XIII. 325—book trade of Germany, X. 592; of United States, XXI. 423—number of booksellers in London, XIII. 660.
 Bool or Bohol, island, IV. 813.
 Boolak, in Egypt, VIII. 498.
 Boole (Dr), on the laws of thought, XIII. 578.
 BOOM, V. 33; XI. 222.
 BOOMERANG, V. 33.
 BOOMING, V. 33.
 BOONDEE, town in Hindustan, V. 33.
 BOORHANPOOR, town in Hindustan, V. 33.
 Booriats of Siberia, XIX. 550.
 Booro, island, V. 33.

BOO—BOR

BOOROOJIRD, Persian city, V. 33.
 BOOT, V. 33—order of the, XIII. 121.
 BOOTAN, country in Asia, V. 33.
 Bootanese, people in Tibet, XXI. 247.
 BOOTES, constellation, V. 35; IV. 79.
 BOOTH (Barton), tragedian, V. 35; XXI. 175.
 — (Benjamin), on book-keeping, V. 15.
 BOOTHIA FELIX, V. 35; XVIII. 172.
 BOOTON, island, V. 35.
 BOOTY, V. 35.
 BOPAL, in Hindustan, V. 35.
 Bopp (E. Francis), on the Sanscrit language, XVII. 529.
 Bora, wind, XIV. 470.
 Borabora, IV. 815.
 BORACIC ACID, V. 35; VI. 481; XV. 61, 64—analysing stones by means of, VII. 668—specific gravity of, XII. 89—in the Lagune of Tuscany, XVII. 602.
 Boracite, XV. 94—pyro-electricity of, VIII. 559.
 Borage, plant, XI. 745; V. 201.
 Boraginaceæ, nat. order of plants, V. 201.
 BORAK, fabulous animal, V. 36.
 Boras, Indian race, XI. 92.
 BORASSUS, genus of palms, V. 36; XXI. 350.
 Borate of lime, XV. 94.
 BORAX, V. 36; VI. 481; XV. 98—in the lakes of Thibet, XVII. 602—used as a flux with the blowpipe, IV. 791.
 Borbonica library at Naples, XIII. 415.
 Borborus, genus of insects, IX. 258.
 BORDA (John Charles), V. 36; I. 851—on projectiles, XI. 133—on hydraulics, XII. 152—on the pendulum, I. 851; XVII. 383—his pneumatic experiments, XVIII. 67—his measuring rules, 703—on seamanship, XX. 11.
 BORDE (Andrew), V. 38.
 BORDEAUX, V. 38; X. 632—Roman edifices formerly at, III. 444, n.—population, X. 277—Academy of, XXI. 491—wines of, 883, 890; exports of, to Britain, 883.
 — (Henri), Duke de, his birth, X. 183—visit to England, 220.
 Borden, on the cellular membrane, II. 765, 786.
 Bordier (Marcet), his reflectors, XIII. 470.
 Bordier's method of making leather, XIII. 308.
 Bording (Anders), Danish lyrical poet, XIX. 692.
 Bords de l'Eau, conspiracy of, X. 179.
 Bordures, in heraldry, XI. 326.
 Bore of rivers, XVI. 65—at the mouth of the Brahmapootra, V. 266—of the Amazon, II. 675—Hooghly, XI. 619, XVII. 581.
 BOREAS, V. 38.
 BOREL (Pierre), V. 38.
 BORELLI (Giovanni Alfonso), V. 38; XIV. 461—the first who demonstrated the impossibility of flying, II. 167—treatise of Apollonius on conic sections discovered and translated by, III. 301; VII. 249—his diving-bladder, VIII. 58—on the diving-bell, 60.
 Boreus, genus of insects, IX. 178.
 BORGA, in Finland, V. 39.
 BORGHESE, noble Sienese family, V. 39.
 BORGIA (Alexander), V. 39. See Alexander VI., pope.
 — (CÆSAR), V. 39; XII. 651; II. 467—Machiavelli's intercourse with, XIII. 777.
 — (LUCREZIA), V. 39; II. 467.
 BORGO (San Donino), town in Parma, V. 39.
 — (SAN SEPOLCRO), in Tuscany, V. 39.
 BORGOGNONE (Jacopo Cortese), V. 39.
 BORGOO, or Borgu, two kingdoms in the interior of Africa, V. 40; II. 211.
 BORING, V. 40—of cannon, *ib.*—of cylinders, 43—of musket barrels, 44; XI. 97—of wooden pipes, V. 45—for coal, VII. 119.
 — of rocks, V. 44; IV. 755. See Blasting.

BOR—BOS

Boris, sovereign of Russia, XIX. 474.
 BORISSOV, town in Russia, V. 45.
 BORJA, Spanish town, V. 45.
 BORKUM, island, V. 45.
 BORLACE (Dr Edmond), V. 45.
 BORLASE (William), V. 45—his Natural History of Cornwall, XVI. 728.
 BORMIO, in Lombardy, V. 46.
 BORN (Ignatius, Baron Von), V. 46.
 BORNEO, V. 47—diamonds found in, VIII. 1, 2—Chinese in, VI. 585—orang-outang of, XIV. 138—missions established in, XV. 271—language, XIII. 207—serpents in, XVII. 634; XIX. 53, 54, 60, 86—trade with Singapore, XX. 307.
 BORNHOLM, island, V. 50.
 Bornite, mineral, XV. 117.
 BORNOUT, kingdom of central Africa, V. 50; II. 229.
 Borodia, genus of fishes, XII. 285.
 BORODINO, Russian village, V. 54—battle of, X. 156.
 BORON, V. 54; VI. 481; VII. 670.
 BOROUGH, V. 54—Royal, *ib.*—justices, XVIII. 192—police, 196.
 BOROUGHs, representation of, V. 54; XVII. 293, 294—extension of their boundaries, VIII. 719. See Municipal Corporations.
 BOROUGHBRIDGE, in Yorkshire, V. 54—battle of, VIII. 681.
 BOROUGH-ENGLISH, V. 54.
 BOROVSK, town in Russia, V. 54.
 BORRELISTS, sect, V. 54.
 BORRICHIUS, or Borch (Olaus), V. 54.
 BORROMEAN ISLANDS, V. 54; XII. 637; XIII. 644.
 BORROMEO (Carlo), cardinal, V. 55—colossal statue of, VII. 151; III. 673.
 — (FREDERIGO), founder of the Ambrosian Library, V. 56; XIII. 413.
 BORROMINI (Francesco), V. 56—character of his style of architecture, III. 453.
 Borrowdale, black-lead mines in, VII. 577; XVII. 375—annual fall of rain in, XIV. 657.
 BORROWSTOWNNESS, in Linlithgowshire, V. 56—bed of marine shells near, IX. 794—coal-fields of, XIII. 497.
 BORSEHOLDER, V. 56.
 Borsonia, fossil mollusks, XVII. 110.
 Borulawski, a Polish dwarf, VIII. 271.
 Bory de St Vincent on animalcules, III. 195 *et seq.*—tabular view of his classification of animalcules, 196—account of Bourbon, V. 247—on lizards, XIX. 28—on cameleons, 37.
 BORYSTHENES, river, V. 56.
 Bos, genus of mammalia, V. 56; XIV. 213—teeth of, XVI. 466, 467—fossil species, XVII. 170—palæontological characters of, 172—B. primigenius, 641.
 — ancient coin, V. 56.
 BOSA, Sardinian city, V. 56.
 Bosc, his bee-hive, III. 295—on the alligator, XIX. 25—on the rattlesnake, 69—on zoophytes, XXI. 992.
 BOSCAJE, V. 56.
 BOSCAN (Almogaver, Juan), poet, V. 56; X. 402—poetry of, XVIII. 113.
 BOSCAWEN (Edward), admiral, V. 56, 463.
 BOSCOR, or Bosci, monks, V. 57.
 BOSCOVICH (Roger Joseph), V. 57—his extraordinary talents, I. 202—his theory of the constitution of the universe, 721, 936—reasoning by which he supported it, 721—sketch of his life and writings, *ib.* n.—observed his theory by scholastic metaphysics, 722; it may be regarded as a happy extension of the law of attraction, *ib.*—on achromatic glasses, II. 93—on aurora borealis, IV. 246—on the construction of combs, 578—on the orbits of comets, VII. 168—on crystallization, 546—his measurement of a degree, IX. 550—on the spectrum, XVI. 584—his theory regarding the senses, XIV. 613—manner in which he has represented the action of corpuscular forces, XX. 751; his work on that subject, 755.
 Boshi, or Bautsch, in Houssa, XI. 776.
 BOSJESMANS, or Bushmen, V. 58.

BOS—BOT

BOSNA-SERAI, Turkish city, V. 58.
 BOSNIA, in Turkey, V. 59; XXI. 380.
 BOSPHORUS, V. 59; IV. 740—supposed bursting of the Thracian, 741—map of, VII. Plate.
 — (Cimmerian), monarchy of, XV. 412.
 Bosanquet (Mr), on the bullion question, XIX. 153.
 BOSQUETS, in gardening, V. 59.
 Boss, in architecture, III. 508.
 BOSSCHA (Hermann), V. 59.
 BOSSCHAERT (Thomas Willibrord), V. 59.
 BOSSINEY, in Cornwall, V. 59.
 BOSSO, or Bossus (Matteo), V. 59.
 BOSSU (René le), V. 59.
 BOSSUET (Jacques Bénigne), V. 59—contrast between him and Fénelon, I. 351—his reply to Fénelon concerning man being influenced by a disinterested love of God, 352—in this controversy relied mainly on the principle that, as man must desire his own happiness, he desires everything as a means to it, *ib.*—his opposition to Madame Guyon's opinions, XI. 163—his attack on Fénelon, XV. 758; IX. 506.
 BOSSUT (CHARLES), V. 61—his experiments on the resistance of water in narrow canals, I. 725; to vessels, XX. 158—on hydrodynamics, XII. 72, 114, 116 *et seq.*; XVIII. 64; XIX. 187, 189—his wheel, XII. 142.
 BOSTON, in Lincolnshire, V. 61.
 — in Massachusetts, V. 61; XIV. 341—destruction of tea at, V. 477—free library at, XIII. 430; XXI. 424—early newspapers of, XVI. 192—gazette, 193—ice-trade of, XII. 196—suicides in, XX. 800—military operations at, during the Revolutionary war, XXI. 749—evacuated by the British forces, 750—temperature at, 421.
 — (THOMAS), Scottish divine, V. 63.
 — (Elizabeth), VIII. 700.
 Bostrichus, genus of insects, IX. 142.
 BOSWELL (James), of Auchinleck, V. 63—his intercourse with Dr Johnson, XII. 800—notice of Dr Adam Smith by, XX. 344, n. 2.
 BOSWORTH-MARKET, in Leicestershire, V. 64—battle of, VIII. 694.
 BOTAL (Lionardo), V. 64.
 Botanic garden, Edinburgh, VIII. 399—of Montpellier, XV. 521—Glasgow, X. 656.
 Botanical structures, XI. 754.
 BOTANY, V. 65—structural and physiological, 65—taxological, or relating to classification, 174—geographical, 219—palæontological, 232—Cæsalpinus on, VI. 56—distinction between plants and animals, II. 748; III. 168—Cavanilles on, VI. 349—Druidical knowledge of, VIII. 188—its advancement in connection with materia medica, XIV. 461—distribution of plants, XVII. 624—of the Alps, II. 626—Canary Islands, VI. 164—Ceylon, 393—Egypt, VIII. 430—Madeira, XIII. 800—Himalayas, XI. 443—Lapland, XIII. 235—Madagascar, 791—Perthshire, XVII. 458—Scotland, XIX. 795—Museum of Economic, XXI. 323—of Cape Verde Islands, 544. See Plants, and the geographical articles generally.
 BOTANY BAY, V. 239; IV. 271, 272.
 BOTARGO, V. 239.
 Botaurus, genus of birds, XVI. 799.
 Botero (Giovanni), early notice of tea by, XXI. 88.
 BOTH (Jan and Andreas), Flemish painters, V. 239.
 BOTHNIA, V. 239.
 — Gulf of, V. 240; IV. 402, 404.
 Bothrioccephus, genus of zoophytes, XXI. 979.
 Bothriolepis, genus of fossil fishes, XII. 336; XVII. 120.
 Bothroconis, fossil sponges, XVII. 93.
 BOTHWELL, in Lanarkshire, V. 240.
 Bothwell Bridge, battle of, V. 430.
 — (JAMES HEPBURN), Earl of, V. 240; VIII. 391; XIX. 785.

BOT—BOU

- Botryllidæ, family of mollusks, XV. 332.
 Botryllus, genus of mollusks, XV. 330, 331.
 Botryogene, mineral, XV. 97.
 BOTRYOIDAL, V. 240.
 Botryolite, mineral, XV. 94.
 Botrytis infestans, fungus supposed to be the cause of the potato disease, V. 172, 147.
 Bots, V. 240; IX. 247—in cattle, XXI. 569.
 Botta (M.), his discoveries on the site of Nineveh, XVI. 273.
 Böttcher (J. Frederick), his manufacture of porcelain, XVIII. 435.
 BOTTICELLI (Alessandro), V. 240.
 Böttiger on Tacitus, XXI. 4, 5.
 BOTTLE, V. 240.
 — glass, X. 674.
 — nose whale, dentition of, XVI. 443.
 Bottling of wines, XXI. 883.
 BOTTOM, V. 240.
 BOTTOMRY, V. 240.
 BOTTONY, in heraldry, V. 241; XI. 329.
 BOTTRIGARI (Ercole), V. 241.
 Botys, genus of insects, IX. 218.
 BOTZEN, or Bolzano, in the Tyrol, V. 241.
 Bouchardat (M.), on the polarization of fluids, XVI. 681.
 BOUCHE OF COURT, V. 241.
 Boucher de la Richarderie, his catalogue of voyages and travels, IV. 714.
 Boucherie (Dr), his method of preserving timber, XX. 167.
 BOUCHES DU RHONE, department of France, V. 241.
 Bouchette (Colonel), his work on British America, VI. 147.
 Boudet on the oil of the blood, II. 781.
 BOUFLERS (Louis François, Duke de), V. 242, 447, 448; IX. 369.
 BOUGAINVILLE (Louis Antoine de), V. 242 —on the Periplus of Hanno, X. 461—his discoveries in Australasia, IV. 263, 265—his settlement in the Falkland Islands, V. 470—discovery of one of the Samoan group of islands, XVIII. 277—his visit to Tahiti, 280.
 BOUGEANT (Guillaume Hyacinthe), V. 243 —his notion that brutes are animated by devils, 701, 702— anecdote in proof that they can communicate their ideas to each other, 704.
 BOUGIAH, V. 243. See Bugiah.
 BOUGIE, surgical instrument, V. 243; XX. 831.
 BOUGUER (Pierre), V. 243—on the attraction of mountains, I. 834—reduced the theory of hydrostatics, as applied to naval architecture, into a simple and elegant form, 724—his life and character, 724, n. 1—his rule regarding the barometrical measurement of mountains, 730—his treatise on the figure of the earth, 773; III. 806—measurement of a degree by, in South America, ib.; IX. 549; III. 806; VII. 230—on the moon's light, IV. 41—on the gradation of atmospheric density, 464—his quarrel with Condamine, VII. 230—optical phenomenon seen by, 411—his heliometer, XI. 289; XIV. 747—on reflected light, XIII. 451—on optics, XVI. 535—photometry, XVII. 555—on seamanship, XX. 2, 3, 9, 17—on the strength of oak, 775.
 BOUHOURS (Dominique), V. 244—his French New Testament, IV. 701.
 Bouillaud (Ismael), his catalogue of books, XIII. 378.
 Boulac, or Boolak, VIII. 498.
 BOULAINVILLIERS (Henri de), V. 244.
 BOULANGER (Jean), engraver, V. 244.
 — (NICOLAS-ANTOINE), V. 244.
 BOULANGERITE, mineral, V. 245; XV. 119.
 BOULAY (Cesar Egasse du), V. 245—on the University of Paris, XXI. 445, n. 1, 446, n. 1, 447.
 Boulaye (Marquis de la), VII. 232.
 BOULDER, V. 245; VII. 723; XV. 215; IX. 327.
 — formation, in geology, V. 245; XV. 215; XVII. 587.

BOU—BOU

- BOULOGNE-SUR-MER, V. 245—Nelson's attack on, 583—Bonaparte's encampment at, 597—population, X. 277.
 BOULTER (Hugh, D.D.), V. 245.
 BOULTINE, V. 246.
 Boulton (Edmund), IV. 839.
 — (MATTHEW), V. 246—his coining machine, VII. 91.
 — and Watt, XXI. 776—their steam-boiler, XX. 587—their rule for estimating horse-power, 602—their steamboat machinery, 638, 639.
 BOUNTY, V. 246; VII. 189—act, on the exportation of corn, 377—effects of this, 378—effects of, on the exportation of raw produce, 387—act of 1784, and its effects, 384, 385—bounties have no tendency to reduce the real price of corn by causing a glut of the market, 387—tend to increase fluctuations in the price of raw produce, 388—on French fisheries, X. 265.
 Bouquetin, in zoology, XIV. 212.
 Bourasse (J. J.), his entomological sketches, IX. 23.
 BOURBON, name of one branch of the Capet family, V. 246—Neapolitan dynasty of, XX. 264. See France.
 — (CHARLES), duke of, V. 246; X. 29, 30, 31.
 — (Duke of), his death in 1830, X. 203.
 — (NICOLAS), senior, Latin poet, V. 247.
 — (NICOLAS), junior, French poet, V. 247.
 — (ISLE OF), V. 247; II. 229.
 BOURBON-LANCY, French town, V. 248.
 BOURBON-L'ARCHAMBAULT, French town, V. 248.
 BOURBON-VEKDÉE, French town, V. 248.
 BOURBONNAIS, in France, V. 248; X. 277.
 BOURBONNE-LES-BAINS, in France, V. 248.
 Bourchenu de Valbonais, IV. 779.
 BOURCHIER (John), Lord Berners, V. 248.
 BOURDALOUE (Louis), V. 248.
 Bourdeaux. See Bordeaux.
 BOURDELOT (Jean), French critic, V. 249.
 BOURDON (Sebastien), painter, V. 249; XVII. 76.
 Bourdon's metallic barometer, IV. 460.
 BOURG, town in France, V. 249.
 BOURGELAT (Claude), V. 250.
 Bourgeois type, XXI. 401, 403.
 Bourguery's work on anatomy, II. 770.
 BOURGES, French town, V. 250—university of, XXI. 448.
 BOURGET (Jean), V. 250.
 BOURGOING (Jean François), V. 250.
 Bourgueticrinus, fossil echinoderms, XVII. 98.
 BOURGUIGNONS, V. 250, 773.
 BOURIGNON (Antoinette), V. 250.
 Bourke (Sir Richard), governor of New South Wales, IV. 273.
 Bourlet (L'Abbé), his work on the Podurella, IX. 22.
 Bourmont (General), his expedition against Algiers, in 1830, II. 573; X. 197, 203.
 BOURNE, town in Lincolnshire, V. 250.
 — (Wm.), on gunnery, XI. 103—on navigation, XVI. 3.
 — (Sturges), his Poor-law Act, XVIII. 302.
 — (Mr), on mechanical feeders for boilers, XX. 356.
 BOURNONITE, mineral, V. 250; XV. 120.
 BOURRIENNE (Fauvelet de), V. 250—his report of a conversation with Napoleon on the invasion of Britain, X. 136, n. 3.
 Bourrit (M.), his attempts to ascend Mont Blanc, II. 627.
 Bousmard (M. de), on fortification, IX. 816, 833.
 Bousquet (M.), on vaccination, XXI. 501.
 BOUSSA, town in Central Africa, V. 250—Park killed at, II. 210.
 BOUSSINGAULT (M.), on rural economy, II. 374—on the advantages of irrigation, XII. 611—on the absorption of leaves, V. 103.
 BOUSTROPHEDON, V. 250, 10.

BOU—BOY

- BOUTERWEK (Friedrich), V. 250—on poetry, XVIII. 115, 118.
 BOUTS-RIMÉS, V. 251.
 Bouvard (M.), his tables of Uranus, I. 828 —dates of his birth and death, 829, n. — (Eugène), I. 829.
 Bovey coal, VII. 763.
 Bovichthys, genus of fishes, XII. 273, 218.
 Bovidæ, fossil, XVII. 169.
 BOVINO, Neapolitan town, V. 251.
 Bow, V. 251—said to have been invented by the Philistines, XVII. 515—cross-bow, V. 251—in shipbuilding, ib.; XVI. 97—net, V. 251. See Archery.
 Bowden (A.), on dry-rot, VIII. 207, 208.
 BOWDICH (Thos. Edward), V. 251—his mission to Ashantee, III. 725.
 — (NATHANIEL), V. 251—his commentary on the Mekanique Celeste, I. 827.
 Bowels. See Intestines.
 BOWER, V. 251.
 — ANCHOR, V. 251; III. 116.
 — (Walter), IX. 777.
 Bowerbank (J. S.), on the circulation of the blood in insects, IX. 22, 49—on the larvæ of Agrion, 49—on sponges, XXI. 1008.
 Bow-fell, in Westmoreland, XXI. 842.
 BOWIE-KNIFE, V. 251.
 BOWLES (Rev. Wm. Lisle), V. 251—his suggestion as to the original use of church spires, III. 449—his controversy with Roscoe, XIX. 419.
 BOWLINE, V. 252; XX. 125.
 BOWLING, V. 252.
 — GREEN, V. 252.
 Bowman (Mr), on the corpora globosa of the kidney, II. 769—on muscular filament, 821.
 — (Mr), iron ship built by, XX. 195.
 Bowring (Mr), on French commerce, X. 257, 258.
 — (Sir John), his visit to Siam, XX. 234; notices of that country, 232, 233 —his translation of a Russian poem, XXI. 971.
 BOWSPRIT, V. 252.
 BOWYER, V. 252.
 — (WILLIAM), printer, V. 252.
 Box, genus of fishes, XII. 287.
 — V. 252—dice-box, ib.—box girders, XX. 781.
 Boxadon, genus of fishes, XII. 287.
 Box-elder tree, XVII. 762.
 Boxer (Capt.), on gunnery, XI. 128, 229 et seq.—his work on artillery, 145—his fuze, 142; III. 702.
 BOX-HAUL, in navigation, V. 252.
 BOXHORN (Mark Zuer), V. 252.
 BOXING, V. 252; XI. 170—boxing the compass, V. 252—the tapping of a tree, ib.
 Boxmoor cast-iron bridge, XII. 588.
 Box tunnel, on the Great Western Railway, XVIII. 761.
 BOXWOOD, V. 252—specific gravity of, XII. 89—plant, as an edging to walks, XI. 748—as timber, XXI. 278—used in wood engraving, 904.
 BOYACA, or Bojaca, in New Grenada, V. 253; X. 797—Bolivar's victory at, in 1819, IV. 818.
 BOYAR, Russian title of nobility, V. 253; XIX. 524.
 BOYAU, in fortification, V. 253.
 BOY-BISHOP, V. 253.
 BOYCE (Hector), V. 253—Bellenden's translation of his History of Scotland, IV. 633.
 — (J.), his life-boat and safety-buoy, XIII. 445.
 BOYD (Mark Alexander), V. 255.
 — (William, Lord), XIX. 760.
 — (ZACHARY), V. 255.
 — (ship), massacre of its crew by the New Zealanders, IV. 267.
 BOYER, a kind of Flemish sloop, V. 256.
 — (Abel), V. 256.
 — (ALEXIS), V. 256.
 — (General), President of Hayti, XI. 257.
 — (JEAN BAPTISTE), V. 256.
 BOYLE (Charles), earl of Orrery, V. 256—his controversy with Bentley, IV. 658.

BOY—BRA

- BOYLE (John), earl of Cork and Orrery, V. 256.
 — (RICHARD), earl of Cork, V. 257.
 — (RICHARD), earl of Burlington and Cork, V. 257.
 — (The Hon. ROBERT), V. 257—his contributions to metaphysical science, I. 139, n. 2—his improvements of the air-pump, 597; XVIII. 33—on pneumatics, 53; IV. 453—on electricity, VIII. 523—on heat, XI. 260—on the colours of thin plates, XVI. 599—Boylean law in pneumatics, XVIII. 53, 55, 57; I. 958; XX. 563, 564—his improvements in thermometers, XXI. 221.
 — (ROGER), earl of Orrery, V. 259.
 — Lectures, V. 260.
 — or Abbey Boyle, in Ireland, V. 260.
 BOYNE, Irish river, V. 260; XIV. 375; XVI. 87—battle of the, V. 442; VIII. 179; XII. 490—Boyne bridge, 597.
 BOYSE (John and Samuel), V. 260.
 Boze (Prof.), his electrical discoveries and improvements, VIII. 526, 527.
 BOZRAH, V. 261.
 BRA, Sardinian town, V. 261.
 Braan, river, falls of, VIII. 260.
 BRABANCIONES, V. 261.
 BRABANT, V. 261; XI. 582, 587; IV. 612, 613, 614.
 Brabazon (Mr), on Irish fisheries, IX. 631, 633.
 BRABEUTES, V. 261; II. 242.
 Braby's fire-escape, XIII. 438.
 Bracciano, lake, XVII. 242.
 Braccioli (Anthony), his Italian Bible, IV. 701.
 BRACCIOLINI (Francesco), poet, V. 261.
 — (Poggio), V. 261—his Ana, II. 737 —MS. of Quintilian discovered by, XVIII. 738.
 BRACE and Braces, V. 262.
 — (Mr), on Norway, XVI. 330, 331, 332.
 Bracegirdle (Mrs), actress, XXI. 174.
 BRACELET, V. 262.
 Brache (Mr), his estimate of the extent of auriferous land in Victoria, XV. 232.
 Brachelytra, family of insects, IX. 102.
 Brachinus, genus of insects, IX. 79.
 BRACHIOPODA, class of mollusca, V. 262; XV. 336, 322—fossil, XVII. 103—extinct genera of, 115.
 Brachiuna, genus of zoophytes, XXI. 982.
 Brachlesham, eocene beds, XV. 212, 213.
 BRACHMINS, V. 262. See Brahmins.
 Brachon, genus of insects, IX. 188.
 Brachycerus, genus of insects, IX. 138.
 BRACHYGNATHUS, genus of fossil fishes, V. 262; XII. 355.
 BRACHYGRAPHY, V. 262. See Stenography.
 Brachyopa, genus of insects, IX. 240.
 Brachyptera, family of birds, XVI. 809.
 Brachypus, genus of insects, IX. 140.
 Brachysomophis, genus of fishes, XII. 232.
 Brachystoma, genus of insects, IX. 235.
 Brachyura, tribe of crustacea, VII. 540—fossil, XVII. 100.
 BRACKET and Brackets, V. 262.
 BRACKLEY, in Northamptonshire, V. 262.
 Bracteates, coins, XVI. 386.
 Bractlets, or Bracteoles, in botany, V. 113.
 BRACTON (Henry), V. 262.
 Bracts, in botany, V. 112.
 Bracy-Clark, his work on Bots, IX. 11; XXI. 569—his account of these insects, IX. 247.
 Bradano, river, XX. 238.
 Bradbury (Henry), his nature-printing process, XVIII. 555.
 — Rings, VIII. 112.
 Braddock (General), XXI. 745.
 BRADFORD, in Yorkshire, V. 263; XXI. 958, 959—woollen and worsted manufactures of, XIV. 287; XIII. 313; XXI. 918—wages at, 920.
 — (GREAT), in Wiltshire, V. 263.
 — (JOHN), V. 263.
 BRADING, in Isle of Wight, V. 263—XXI. 862.
 BRADLEY (Dr James), V. 263; III. 804—

BRA—BRA

his discovery of the aberration of light, I. 685; II. 36; III. 804; of the nutation of the terrestrial axis, 805—on refraction, IV. 9—his micrometer, XIV. 758—his catalogue of stars, IV. 80—on the proper motion of the stars, I. 845—reduction of his observations by Bessel, 848, 849—on the action of the wind on vessels under sail, XX. 6.

BRADNINCH, in Devonshire, V. 264.

BRADS, kind of nails, V. 264, 750.

BRADSHAW (Henry), V. 264.

— (JOHN), V. 264.

— (WILLIAM), V. 264.

BRADWARDIN (Thomas), archbishop of Canterbury, V. 264; I. 325, n. 5—his ethical doctrines, 325.

BRADY (ROBERT), V. 264.

— (NICHOLAS, D.D.), V. 265.

Bradyptus, genus of mammalia, XIV. 190—dental system of, XVI. 441.

BRAEMAR, in Aberdeenshire, V. 265; II. 32—its excellent fir timber, XII. 817.

Brag, game at cards, V. 265.

BRAGA, in Portugal, V. 265.

BRAGANÇA, in Portugal, V. 265.

Braganza, Duke of, XVIII. 386—dynasty in Portugal, 392.

BRAHE (Tycho), V. 265; III. 798; VII. 348, 349, n.—his merits and discoveries as an astronomer, I. 601 *et seq.*—his belief in astrology, 604—his discovery of the inequality of the moon's latitude, IV. 34—on the formation of a new star, I. 842—astronomy of comets originated with, VII. 167—his planetary system, IV. 54—his catalogue of stars, 80—on the longitude, XIII. 686.

BRÄHLOW, in Wallachia, V. 266.

Brahm (N. J.), his entomological works, IX. 8.

— XI. 468; V. 266; XV. 761.

BRAHMA, supreme god of the Indians, V. 266; XI. 467; XV. 761; XVII. 230.

BRAMAPOOTRA, river in India, V. 266; IV. 648; X. 401; XVII. 606—its source, III. 762; XI. 440, n. 2.

Brahmegupta, algebraist, II. 487.

BRÄHMINS, V. 266; VI. 317; XI. 468–9, 471; XVII. 19—produced by Brahma, XV. 761—Playfair on their astronomy, XVIII. 4—suicide favoured by the, XX. 799.

Brahoes, IV. 641, 639.

BRAHOICK MOUNTAINS, V. 272; IV. 640.

Braid (Dr), on animal magnetism, XX. 432, 433, 434.

BRAIDING-MACHINE, V. 272.

BRAILS, V. 272.

BRAIN, V. 272; (HUMAN) II. 818; XVII. 668, 669—description of, by Galen, II. 753; and by Vesalius and Varoli, 759, 760—Willis on the anatomy of, 762—anatomical researches on, 767—Soemmering on, 769—recent authors on, 770—structure of, 818—grey and white matter of, XVII. 669, 670, 681—weight of, III. 3, 51—its anatomy, 51—convulsions, 52—ventricles, 53—blood-vessels, 56—membranes, *ib.*—its connection with the nutritive organs, 58—its functions, 172; XIV. 526; XVII. 556 *et seq.*, 673—effect of unoxxygenated blood on, VIII. 181—mental disorders the result of diseases in, XIV. 526—connection of the mind with, XVII. 556 *et seq.*, 673—Gall's opinions concerning, X. 383, 384; XVII. 558, 559 *et seq.*—its laws of action as the organ of mind, 560—connection between its size and mental energy, *ib.*—diseases of, 699, 700—congestion in, 701—toxic-derangements of, 702—circulation in, and effects of pressure on, 698—Leuwenhoeck's observations on, XIII. 349—insanity a disease of the, XIV. 526—idiocy dependent on some congenital disease of, 538—cerebral lobes, &c., XVII. 672—Spurzheim's illustrations of its structure and functions, XX. 519. See Cerebellum, Phrenology.

— (IN THE LOWER ANIMALS), anatomy of, III. 103—its size in proportion to

BRA—BRA

the body in different animals, 104, 176—supposed relation of intellectuality to the extent of its surface, 176—dispersed over the body in invertebrate animals, *ib.*—the greater its relative size, the greater in general its sensibility, 178—its small size in the horse, *ib.*—of quadrupeds, II. 773—of fishes, XII. 219—of the crustacea, VII. 538—of insects, IX. 43—of the dolphin, XIV. 223, 239—of the whale, 239—its representative in the mollusca, XV. 320—reptiles, XIX. 14—serpents, 48—its diseases in the domestic animals, XXI. 574—water in, 575.

BRAINERD (David), V. 272.

BRAINTREE, town in Essex, V. 272.

BRAIT, a diamond in its rough state, V. 272.

Brake, in mechanics, XIV. 413—on railway carriages, XVIII. 795.

BRAKEL (Jan de), Dutch officer, V. 272.

BRÄKENBERG (Reinier), Dutch painter, V. 272.

Brakes, kind of harrow, II. 272.

BRAMA, the bream, V. 272; XII. 302. See Bream.

BRAMAH (Joseph), V. 272—his filter, IX. 581—his lock, XIII. 533.

BRAMAH'S HYDROSTATIC PRESS, V. 274; II. 102; XII. 75, 178—used in calendaring, VI. 91.

BRAMANTE (Donato Lazzari), V. 274—his character as an architect, III. 452—his designs, *ib.*

BRAMANTINO, name of several Milanese artists, V. 275.

BRAMBANAN, in Java, V. 275.

Brambilla, his work on insects, IX. 17.

Brambling, bird, XVI. 761.

BRAMHALL (John), D.D., archbishop of Armagh, V. 275.

Bramins. See Brahmins.

BRAMPTON, V. 275.

BRAN, V. 275; IV. 379; as manure, II. 406.

Branas, VII. 317.

Branca, his steam apparatus, XX. 574.

Brancepeth Castle, VIII. 267.

Branchellion, genus of annelides, XI. 307.

Branches of plants, V. 78, 83—subterranean, 79.

Branchia, of the crustacea, VII. 539—of the annelides, XI. 293—mollusks, XV. 323, 326, 334 *et seq.*

BRANCHIDÆ, priests, V. 275.

Branchiella, genus of zoophytes, XXI. 982.

Branchiobdella, genus of annelides, XI. 307.

Branchiopoda, crustacea, VII. 543.

Branchipus stagnalus, VII. 543.

BRAND-SUNDAY, V. 275.

Brande (Prof.), on the electricity developed in flame, VIII. 567—on the alcohol in porter, V. 332—his recipe for making ink, XII. 383—his table of the alcoholic contents of wine, XXI. 889.

BRANDENBURG, in Prussia, V. 275—history of, XVIII. 646—agriculture, 665, 666—war with Sweden, XX. 851, 852.

Brandes (M.), his galvanic experiments, XXI. 626.

BRANDEUM, V. 276.

BRANDING, V. 276—herrings, IX. 640, 641.

Brandisite, mineral, XV. 79.

Brandling-worm, as a bait, III. 155.

BRANDON, town in Suffolk, V. 276.

BRANDRITH, V. 276.

Brandstén (P. W.), his work on insects, IX. 17.

BRANDT, an alchemist, V. 276.

— (GERARD), V. 276.

— (SEBASTIAN), V. 276; IV. 438 n. 1.

— (Count), VII. 742.

BRANDY, V. 276; VIII. 51; IX. 760—reduction of the duty on, XXI. 74—French, X. 247, 256—produce in Portugal, XVIII. 398—specific gravity of, XII. 89—imports of, into the United Kingdom, VIII. 735—mixture of with wines, XXI. 883, 888—wines converted into, 884.

Brandywine, river, VII. 703.

— battle of, XXI. 751.

BRANK, V. 276.

BRA—BRE

Branson (Dr Ferguson), on nature-printing, XVIII. 555.

BRANTOME (Pierre de Bourdeilles), lord abbot of, V. 276—on chivalry, VI. 625, 626—on duels, 626—on the character of L'Hôpital, XI. 625.

Brasenose College, Oxford, XXI. 459.

BRASIDAS, V. 276; IV. 206.

BRASS, V. 276; VI. 497; VII. 350—annealing of, III. 219—loss of tenacity in brass wire by exposure to the fumes of acids or damp air, *ib.*—soldering with, V. 299—guns of, VI. 180; XI. 133 *et seq.*, 148; XVI. 93—specific gravity of, XII. 88—magnetism of, XIV. 26; VI. 345—Corinthian, V. 278; VII. 368—brass colour, V. 278—leaf, 278—used in coinage, XVI. 353—brass goods manufactured at Birmingham, IV. 731.

Brasseur (de Bourbourg, abbé), on the antiquities of Central America, XI. 77.

Brassicææ, nat. order of plants, V. 182—species used as food, IX. 760.

Brassolis, genus of insects, IX. 208.

BRAUER (Adrian), Dutch painter, V. 278.

Braula, genus of insects, IX. 259.

BRAULS, or turbans, V. 278.

Braunite, mineral, XV. 111.

BRAUNSBURG, in Prussia, V. 278.

BRAURONIA, ancient Greek festival, V. 278.

Brava, island, XXI. 645.

Bravais (M.), on halos, XVI. 688, 689.

BRAWN, V. 278.

Brawny, barony in Westmeath, XXI. 839.

Braxy, a disease in sheep, II. 350; XXI. 566.

BRAY (Sir Reginald), V. 278.

— (Dr Thomas), V. 278.

— (Gabriel), his life-boat, XIII. 445.

— in Berkshire, V. 278.

— in Ireland, V. 278.

— (Lough), in Wicklow, XXI. 858.

BRAZEN SEA, V. 278.

BRAZIER, V. 279.

BRAZIL, V. 279; II. 703, 668—history of, V. 279—physical geography, 291—statistics, 294—mountains of, II. 670; XVII. 595; their height, 645—revolutionary movements in, II. 703—climate of, 673, 703—aboriginal population, 691—tradition of the deluge in, VII. 719—British consuls in, 337—diamonds of, VIII. 1, 2, 4—trade with France, X. 260—empire of, XV. 412—Jesuits in, XII. 755—languages of, XIII. 224—pampas of, XVII. 608—bone caves in, 639—King John's policy towards, XVIII. 383—metallic produce of, XV. 248; XVIII. 461—postal system, 424—sugars of, XX. 795, 796—cultivation of tea in, XXI. 81—weights and measures of, 810—map of, II. Plate.

BRAZIL-NUT, V. 299, 192; IV. 678; XVI. 395.

— **WOOD**, V. 299, 294, 190—as a dye-stuff, VIII. 287—specific gravity of, XII. 89.

Brazilian branch of American aborigines, II. 677.

Brazilio-Guarani, South American tribes, IX. 349.

BRAZING, V. 299.

BRAZOS DE DIOS, river in Texas, V. 300.

BRAZZA, island, V. 300.

BREACH, V. 300.

BREAD, V. 300—sacramental, *ib.*—assize of, *ib.*; IV. 234—baking of, 378—leavened and unleavened, 378, 379, 381—use of alum in, 381—test of, *ib.*—bread-making, IX. 766—adulteration of, II. 154; IX. 770.

BREAD-FRUIT, V. 300, 139, 206.

— order of plants, V. 206.

Breadalbane, district of Perthshire, XVII. 454.

BREAKERS, V. 301.

Breaking of bodies across, XX. 760.

Breaking-down of horses, XXI. 560.

BREAKWATER, V. 301; VII. 323—Cherbourg, 302; VI. 527; XI. 219—at Plymouth, V. 306; XVIII. 17—Delaware, VII. 703—profile of, for harbours of

BRE—BRE

refuge, XI. 218—floating breakwaters, 223—mode of laying the foundations, XX. 722.

BREAM, fish, V. 310; XII. 256—angling for, III. 160—as food, IX. 764.

BREAMING, V. 310.

BREAST, V. 310; III. 72—hooks, in ship-building, V. 311—plate, *ib.*—plough, *ib.*; II. 274—wheel, V. 311; XII. 165; I. 890.

— bone, human, III. 9—in mammalia, 76—in birds, 85.

Breathing. See Respiration.

Brebers. See Berbers.

BRECCIA, V. 311; XV. 141—ossiferous, *ib.*; XVII. 639.

BRECHIN, in Forfarshire, V. 311; IX. 783.

Breckshuach, disease in sheep, XXI. 568.

BRECON, or Brecknockshire, in Wales, V. 311; VIII. 754.

— town, V. 312.

Bred, Pictish king, XIX. 743.

BREDA, in Holland, V. 313—treaty of, 425; XI. 577.

— (JAN VAN), Dutch painter, V. 313.

BREDOW (Gabriel Gottfried), V. 313.

BREECHES, V. 313.

BREECHING, or breechband, V. 313.

— of gun-barrels, XI. 97.

Breeding of live-stock—of horses, II. 338; XI. 635, 646—of bulls, II. 341—of cattle, 343—breeding in-and-in, XI. 635.

Breen (H.), on the orbit of the planet Mars, IV. 90.

BREENBERG (Bartholomew), V. 313.

BREEZE, V. 313.

Breeze-fly, IX. 245.

BREGENTZ, in the Tyrol, V. 313.

Bregmaceros, genus of fishes, XII. 308, 309.

Breguet's "tipsy-key" for watches, VII. 35—his pyrometer, XVIII. 704.

BREHAR, one of the Scilly Isles, V. 313.

Brehon law, XIX. 750.

BREHONS, ancient Irish judges, V. 313.

BREISGAU, in Baden, V. 313.

BREISLAK (Scipione), geologist, V. 313—his views as to the geological nature of the site of Rome corrected by Brocchi, 673.

BREISLAKITE, mineral, V. 314; XV. 81.

Breithauptite, mineral, XV. 116.

Breme (F. de), his entomological works, IX. 22.

BREMEN, V. 314—coins of, XV. 443—weights and measures, XXI. 810.

— steam-vessel, XX. 164—description of, 666.

Bremer (Frederica), her novels, XIX. 293, 702.

— (Otto), his work on Chinese insects, IX. 24.

Bremner's pontoons, XI. 221—method of, forming a life-boat, XIII. 439.

BRENNAGE, V. 314.

Brenner (Fru), Swedish poetess, XIX. 697.

BRENNUS, V. 314.

BRENTFORD, in Middlesex, V. 314.

Brentides, tribe of insects, IX. 138.

Brentus, genus of insects, IX. 138.

BREREWOD (Edward), V. 315.

BRESCIA, in Lombardy, V. 315—wines of, XXI. 886.

BRESLAU, V. 315; XX. 275—swarm of ants at, III. 265—bills of mortality, XV. 601—peace of, XVIII. 652—university of, 673; XXI. 492.

Bresson (Mons.), suicide of, X. 230.

BREST, V. 315—population, X. 277—mode of preserving timber at, VIII. 77, 211.

BRET, local name of the turbot, V. 316.

— (M.), on a mistake of Euler in equations, IX. 306.

BRETAGNE, or Brittany, in France, V. 316; X. 277.

BRETHREN (the Plymouth), V. 316—of the Christian Schools, *ib.*—and Clerks of the Common Life, *ib.*—and Sisters of the Free Spirit, *ib.*—of the Holy Trinity, 317—of the Observation, *ib.*—Moravian, *ib.*; IV. 812—white, V. 317.

BRETON (Cape), V. 317; VI. 205; XVI. 343, 345.

BRE—BRI

Bretonnière (M. de la), his plan for protecting Cherbourg, V. 302.
 Bretschneider, his definition of theology, XXI. 181, 191 *et seq.*
 Bretwalda, Saxon title, VIII. 656.
 BREUGHEL (Peeter), painter, V. 317.
 — (JAN), V. 317.
 Breunnerite, mineral, XV. 92.
 Breven (Mount), electrical phenomena on, VIII. 583.
 BREVET, V. 317.
 BREVIARY, V. 317; XIII. 516.
 BREVIATOR, V. 317.
 BREVIARIUM ALARICIANUM, V. 317; VI. 743.
 Breviceps, genus of reptiles, XIX. 81.
 Brevicite, mineral, XV. 75.
 Brevier type, XXI. 401, 403.
 Brevipennes, tribe of birds, XVI. 795.
 BREWER, V. 318—rate of brewers' licenses, XIII. 435—number of brewers in London, 660; in Scotland, XIX. 804, 805.
 — (ANTHONY), poet, V. 317.
 — (Mr), his method of dyeing nankeen yellow, VIII. 300.
 Breweries, in Belgium, IV. 625—in London, XIII. 665—Prussia, XVIII. 669—Ireland, XII. 521.
 BREWING, V. 318—in England, VIII. 731.
 Brewster (Sir David), I. 911—on philosophical instruments, 912—principal subjects of his researches, *ib.*—on the law of polarization by reflection, *ib.*—his discovery of the polarising structure induced by heat, *ib.*; and by pressure, 913—discovery of biaxial crystals, *ib.*—on the double systems of topaz, &c., *ib.*—on the laws of metallic reflection, 914—metallic polarization, *ib.*—his experiments on the absorption of light, *ib.*—his analysis of the spectrum, 915—his other scientific papers, 916—on apparitions, III. 317—his burning sphere, VI. 15—on the colours of double plates, 647—on refracted colours, 644—his description of the game of curling, VII. 592—on electrical light, VIII. 547—on the pyro-electricity of tourmaline, 559; and other minerals, 530, 560 *et seq.*—on the flash from Rupert's drops, 564—on aurora borealis, 587—his staktometer, XII. 87—his experiments on capillary attraction, 91, 92—on the form of drops, 102—his experiment in connection with capillary attraction, 103—his kaleidoscope, XIII. 37—on the polarization of light, 453—on the two poles of maximum cold, XIV. 11—on the analogy between magnets and unannealed glass, 24—on micrometers, 744, 745 *et seq.*—his micrometers, 749, 750, 754, 755, 756, 760—on the microscope, 765 *et seq.*—on lenses, 765, 768—his grooved sphere, 769, 770—his periscope sphere, 772—his microscopes, 778, 787, 790—his polarizing microscopes, 788—on the illumination of microscopic objects, 794, 795, 796—his life of Sir I. Newton, XVI. 210—his optical discoveries, 539, 544, 581, 583, 584, *et seq.*—on photography, XVII. 548, 550, 554—his photometer, 555—on Prof. Robison's writings, XIX. 239—his lenticular stereoscope, XX. 685—his treatise on the stereoscope, 688; his explanation of the theory of, 690—his binocular camera, *ib.*
 Brewsterite, mineral, XV. 76.
 Brexiaceæ, nat. order of plants, V. 188.
 Brianchon's theorem, X. 551.
 BRIANÇON, in France, V. 341.
 Briaraceæ, family of zoophytes, XXI. 1004.
 Briare, canal of, X. 244.
 BRIAREUS, V. 341.
 BRIBE, V. 341.
 BRIBERY, V. 341—at elections, VIII. 770—in China, VI. 566.
 BRICANI, V. 342.
 BRICK, V. 342—manufacture of, in Middlesex, XIV. 808; in Holland, XI. 583—use of, for garden walls, 699—ancient Rome built of, III. 444—specific gravity of, XII. 88—London built chiefly of,

BRI—BRI

XIII. 663—fire-brick, V. 345—swimming-bricks, *ib.*—in construction, VII. 323—wood-bricks, V. 734—paving-brick, 735—measurement of brickwork, 736—brick clay, XVIII. 439—sun-dried, 430—of Assyria and Babylon, 431; inscriptions impressed on, 521—transverse strength and resistance of, XX. 717, 718—bond in brickwork, VII. 327—brickmaking, V. 343.
 Brick-colour, dyeing of, VIII. 314.
 BRICKLAYER, V. 347, 731—number of bricklayers in London, XIII. 660.
 BRICKLAYING, V. 347, 731, 732.
 BRICKNOGGING, V. 347—mode of measuring it, 737.
 BRICKTRIMMER, V. 347.
 BRIDAINÉ (Jacques), V. 347.
 BRIDE, V. 347.
 BRIDEGROOM, V. 347.
 BRIDEWELL, V. 348—in London, *ib.*; XIII. 678; XVIII. 569.
 BRIDGE, V. 348; VII. 324—natural bridges in America, III. 130—Sunderland bridge, XX. 807—bridges in England, VIII. 722—in France, X. 245—Stirling bridge, XX. 701—bridge of St Esprit, in France, XVIII. 291—in Glasgow, X. 655—London, XIII. 676—discussions regarding the London bridges, V. 354—high-level bridge at Newcastle, XVI. 166—mode of destroying bridges in war, IX. 809—centring for, VI. 372, *et seq.*—Rennie's bridges, XIX. 12—skew-bridges, XX. 314—in landscape gardening, XVII. 773. See Aqueduct, Arch, Centre, Viaduct.
 — (Iron). See Iron Bridges.
 — (Railway), XVIII. 762, *et seq.*—Egyptian, XII. 609—commission on, I. 878—girder-bridges, 876; XII. 587 *et seq.* See Girder.
 — (Suspension), I. 875; XII. 589; XX. 543—the first considerable one in this country erected over the Tweed, I. 875, *n.* 3—of Friburg, X. 305—the Menai bridge, I. 875; XIV. 494—M. Navier's work on, I. 876—R. Stevenson's plan for, XX. 695—of Peru, II. 686; III. 131; XVII. 461—China, II. 688—Bootan, V. 34.
 — (Tubular), I. 876—the idea of, suggested by girder-bridges, 877—Menai Britannia bridge, XII. 589, 607, 608; XIV. 494; dimensions and strength of, I. 877; Stephenson the responsible inventor, *ib.*; his assistants, *ib.*; use of the Bramah press in constructing, XII. 179.
 — (Wooden), VI. 267, 382—best form of, 385—in Switzerland and America, I. 876; VI. 384—R. Stevenson's arches for, XX. 695.
 — in gunnery and music, V. 364—flying-bridge, *ib.*
 BRIDGEND, in Glamorganshire, V. 364.
 BRIDGENORTH, in Shropshire, V. 364.
 BRIDGEPORT, in Connecticut, U. S., V. 364.
 BRIDGE-TOWN, in Barbadoes, V. 364; IV. 430.
 BRIDGEWATER, V. 364.
 — canal, XVI. 54.
 — (FRANCIS EGERTON), duke of, V. 364—his canals, 367; VI. 529; XIII. 179—his bequest to the British Museum, 392.
 — TREATISES, V. 364—Sir C. Bell's, IV. 631—Dr Chalmers's, VI. 405—Kirby's, XIII. 97—Prout's, XVIII. 643.
 BRIDLE, V. 364; XI. 684—mode of managing reins of, 674.
 BRIDLINGTON, in Yorkshire, V. 365—Quay near, *ib.*
 BRIDPORT, town in Dorsetshire, V. 365.
 — Viscount, XI. 617.
 Brie (La), wools of, XXI. 905.
 BRIEF, in law, V. 365—Apostolical, *ib.*
 BRIEG, in Silesia, V. 365.
 BRIEL, town in Holland, V. 365.
 BRIENNE LE CHATEAU, French town, V. 365.
 — battle of, X. 166.
 — (Jean de), XVII. 197—his invasion of Egypt, VIII. 482.

BRI—BRI

Brientz (Lake of), XX. 889.
 BRIEUC (St), town in France, V. 365.
 BRIG, vessel, V. 365.
 BRIGADE, V. 365—brigade-major, *ib.*—artillery brigades, XXI. 716. See Army.
 BRIGADIER, V. 365.
 BRIGANDINE, coat of mail, V. 366.
 BRIGANTES, V. 366; XXI. 845, 956.
 BRIGANTII, V. 366.
 BRIGG, or Glandford Brigg, V. 366.
 BRIGGS (Henry), mathematician, V. 366—on logarithms, XIII. 553, 554, 557, 560—his visits to Baron Napier, XV. 777.
 — (WILLIAM), physician, V. 366.
 Brigham, meeting of a Scottish parliament at, XVII. 290.
 Bright (Messrs), their electro-magnetic receiving instrument, XXI. 103, 104.
 — (Sir Charles), on electric telegraphs, XXI. 95, 100, 103—his mode of receiving telegraphic signals by the sound of bells, 103, 104, 108.
 — (Timothy), his shorthand writing, XX. 675.
 BRIGHTON, V. 366; XX. 838, 839—jetty or pier of, III. 491—excursion railway trains to, XX. 840.
 Brightwell (Mr), on leeches, XI. 306, 307.
 BRIGITTINS, or Bridgettins, V. 367.
 BRIGNOLES, in France, V. 367.
 Brihtric, king of Wessex, VIII. 656.
 BRIHUEGA, Spanish town, V. 367.
 BRIL (Paul), Flemish painter, V. 367.
 Brill, fish, IX. 634, 764.
 BRILLIANT, V. 367; VIII. 4.
 BRIM, V. 367.
 BRINDISI, Neapolitan town, V. 367; XX. 242—railway to Rome from, XV. 786.
 BRINDLEY (James), V. 367—his aqueduct at Barton bridge, III. 338—blasting rocks in tunnelling first practised by, IV. 755—on hydraulics, XII. 113, 121.
 Brine-worm, VII. 543—Rev. Mr Rackett's account of, *ib.*
 Brine. See Salt-springs.
 Brinjarrees, XI. 466.
 Brinkley (John), bishop of Cloyne, I. 864 *n.*—on the parallax of the fixed stars, 864; IV. 81.
 BRINVILLIERS, Marchioness of, V. 368—her poisonings, III. 330.
 BRIOUDE, French town, V. 368.
 Brisbane (Sir Thomas M.), governor of N. S. Wales, IV. 272—his catalogue of stars, 95—his pendulum observations, IX. 573, 574—on Encke's comet, I. 857—observations at his observatory at Makerstoun, XIV. 688.
 — in Australia, IV. 278, 282.
 BRISSE (Mathurin Jacques), V. 368—on ornithology, XVI. 728—his and Cadet's experiments with a burning lens, VI. 14.
 BRISSET (Pierre), physician, V. 369.
 — de Warville (Jean Pierre), V. 369; X. 52, 67, 79—execution of, 82.
 Brissotine faction, X. 71.
 BRISTLES, V. 369—of plants, 75.
 Bristlewort, order of plants, V. 215.
 BRISTOL, V. 369; X. 682; XX. 410, 411—its surrender to Prince Rupert, V. 403—election of Burke as member for, 776—riots at, in 1831, 662—fire at, in 1777, 504—shipping belonging to the port of, VIII. 738—alternation of beds in the coal-fields of, XV. 162—iron bridges at, XII. 582—post-office statistics, XVIII. 416—early shipping of, XX. 124.
 — in Rhode Island, V. 371; XIX. 147.
 — town in Pennsylvania, V. 371.
 — CHANNEL, V. 371.
 — DIAMONDS, V. 371.
 Bristow (Captain), his discoveries in Australasia, IV. 268.
 BRITAIN, V. 372; IX. 398—history of, V. 372—walls of Hadrian and Antoninus, III. 281—agriculture of, II. 248—army of, III. 662—progress of art in, 712—culture of, compared with that of

BRI—BRI

France and Austria, IV. 313—her interest in the balance of power, 392—possessions in America, II. 707—barracks, IV. 470—trade with Buenos Ayres, V. 726; and with Chile, 551—war with China, 596—date of the revolution of 1688, 667—literary chronology of, 707—coinage, VII. 69; has not attained the highest degree of excellence, *ib.*—coal-trade, 44—annual production of coal and extent of coal area in, 126, 127—penal colonies, 139—passion for increasing the navy to excess, 145—colonies, 147—combination among workmen in, 161—commerce, 189; its advantageous situation for, XIV. 277—navigation laws, VII. 145, 189—commercial treaty with France in 1786, 190—exports to North America, India, and West Indies, *ib.*—military commissions in, 201 *et seq.*—communist opinions in, 214, 216—books published in, 356—law of copyright, 355—corn-laws and corn-trade, 374—quantity of corn produced and consumed in, 395—American war, 409—cottage system in, 433—cotton-manufacture, 440, 449; effects of, on the condition of the country, 454—cutlery, 600—dairy management, 621—deaf and dumb in, 686; their proportion to the population, 687—Druids, VIII. 183—expeditions to Egypt in 1798 and 1807, 489, 492—emigration from, 651, 652—mountains of, IX. 383—fairs, 468—fisheries, 589—threatened invasions by the French, X. 108, 121; Napoleon's plan of invasion, 136—rupture with France in 1793, 76—French trade with, 259, 261—constitutional government of, 736—funding system, 328; see Debt, National—rise of British power in India, XI. 481 *et seq.*; causes of success there, 510; internal policy, *ib.* *et seq.*—hounds, 762—hunting, XII. 33 *et seq.*—country gentlemen, 33—insurance companies in, 406—iron manufacture and trade, 544 *et seq.*, 577—iron-bridges, 575 *et seq.*—irrigation in, 619—British libraries, XIII. 389—origin and development of a medical profession and literature in, XIV. 460; state of, in Britain, 463, 464; future prospects, 466—commencement of medical jurisprudence in, 424—mines, XV. 219 *et seq.*—gold in, 233—its mineral wealth and produce, 247, 248—trade with India, XI. 460, 461, 462—British presidencies in, 463—monarchy, XV. 412—education, 823; hints for its improvement, 826—religious missions, 270 *et seq.*—money, 438, 441, 443—enumerations of population, 610—crown of, XI. 335—newspapers of, XVI. 180—present state of the newspaper press in, 191, 192—nobility of, 281—ancient coinage 361—school of painting, XVII. 77, 83 *et seq.*—parliament of, 292—difference in the mean annual rain on the west and east coasts of, 614—imports from Jamaica, XII. 679—trade with Peru, XVII. 473—system of mountains in, 595—planting, 754—increase of population, XVIII. 342—post-office, 402, 403, 406, 407, 424; organization of, 415—precedence of rank in, 451—alliance with Prussia in 1756, 652—railways, 752 *et seq.*; statistics of, 784, 785, 786, 787 *et seq.*—Caesar's invasion of, XIX. 324—the Romans in, 336, 340, 346, 351—alliances with Russia, 488, 489, 492—war with Russia, 493—savings-banks in, 656; suggestions for their improvement, 670—manufacture of soap, XX. 367—somnambulism, 430—naval superiority, 116—shooting, 209—peculiarly the land of sportsmen, 211—war with Spain in 1796, 471; and in 1804, 472—trade with Sweden, 863—imports of tea into, XXI. 91—duty, price, and consumption of tea, 92—imports, deliveries, and exports in and from, *ib.*—establishment of French weavers in, 780—trade with Turkey, 385—war

BRI—BRO

- with Russia, 375; with the United States, 434, 440—trade schools and museums, 329—consumption of wine in, 891; duties on wine, 890—supply of wool, 906—woollen manufactures, 916, 917—trigonometrical survey, 330—weaving, 780 *et seq.* See Chronological Table, VI. 681 *et seq.*; also England, Scotland.
- BRITAIN (New), V. 672; IV. 264; XVI. 162.
- Royal Asiatic Society of Great Britain and Ireland, III. 759.
- Britannia Bridge over the Menai Straits, XII. 179, 589, 607, 608; I. 877.
- Britannica, plant esteemed by the Druids, VIII. 188.
- BRITANNICUS, son of the Emperor Claudian, V. 672; XIX. 337.
- BRITISH GUM, V. 672; XI. 94.
- MUSEUM, V. 672; XIII. 674—Dr Birch's bequests to the, IV. 726—library of the, XIII. 389—aeorolites in, XIV. 632, 635—coins and medals in, XVI. 351, *n.* 3—Peiresc's MSS. in, XVII. 367—Egyptian antiquities in, XIX. 849 and *n.*
- and Foreign Bible Society, IV. 703.
- BRITTANY, V. 672; X. 277. See Bretagne.
- Brittinger (C.), his entomological work, IX. 23.
- Brittleworts, plants, V. 218, 147.
- Britton (Mr.), his proposal to term Gothic architecture "Christian," III. 447—on pointed architecture, 457, 481, 482.
- BRIVES-LA-GAILLIARDE, V. 672.
- BRIKEN, on the Tyrol, V. 672.
- BRIXHAM, in Devonshire, V. 672; XXI. 312.
- BROACH, in Hindustan, V. 672.
- an awl or bodkin, V. 673—an ornament for fastening a plaid, 673.
- Broad, various meanings of the word, VIII. 11.
- Broadcast sowing, II. 274—of wheat, 308.
- BROAD-PIECE, V. 673—broad-side, *ib.*
- Broadshare-ploughs, II. 271.
- BROADSTAIRS, in Kent, V. 673.
- BROCADE, V. 673.
- BROCCHI (Giovanni Battista), V. 673.
- BROCCOLI, V. 673—culture of, XI. 738.
- Broch (J. K.), his work relating to insects, IX. 15.
- Brochantite, mineral, XV. 104.
- BROCK, badger, V. 673. See Badger.
- (Sir Isaac), VI. 159.
- BROCKEN, mountain in Prussia, V. 673—giant or spectre of the, III. 315.
- BROCKLESBY (Richard), physician, V. 673; XXI. 962, 963.
- BRODEAU (John), V. 674.
- BRODERA, or Baroda, in Hindustan, V. 674.
- Broderip (W. J.), on the mollusca, XV. 327—on the Phascolotherium, XVII. 158.
- BRODICK BAY, in Arran, V. 674; III. 675.
- Castle, III. 675; VI. 27.
- Brodie (George), on the Scottish covenanting clergy, IV. 371, *n.* 372—his edition of Stair's Institutions, VII. 630.
- (Sir Benjamin), on the effect of the physical condition on memory, XV. 287.
- (P. D.), his work on fossil insects, IX. 22; XVII. 103.
- BRODY, town in Galicia, V. 674.
- Brogia (Antonio), his work on silkworms, IX. 22.
- Brogie (M. de), X. 210, 211.
- Brognart (M.), his classification of reptiles, XIX. 16.
- BROGUE, V. 674.
- Broiling of meat, IX. 766.
- BROKE (Sir Robert), V. 674.
- Broken-knee, in animals, XXI. 559.
- Broken-wind, in animals, XXI. 571.
- BROKER, V. 674.
- BROMBERG, V. 675.
- BROME (Alexander and Richard), V. 675.
- BROMELIA, V. 675. See Pine Apple.
- Bromeliaceae, nat. order of plants, V. 212.

BRO—BRO

- Bromides—of mercury, VI. 498—silver, *ib.* See Chemistry.
- BROMINE, V. 675; VI. 469; XV. 64—as a test for gas, X. 429—its poisonous quality, XIV. 435.
- Bromite, mineral, XV. 107.
- BROMLEY, town in Kent, V. 675.
- Bromo, volcanic mountain in Java, XV. 191.
- BROMSGROVE, in Worcestershire, V. 675.
- BROMYARD, in Herefordshire, V. 675.
- Bronchial tubes, III. 66.
- BRONCHITIS, V. 675—in the domestic animals, XXI. 572.
- Bronchocele, XX. 815.
- Bronchotomy, XXI. 572. See Tracheotomy.
- BRONSTED (Peter Oluf), V. 675.
- BRONGNIART (Alexandre), V. 676—on fossil plants, 232, 233, 234—director of the Sevres porcelain factory, XVIII. 438—his pyrometer, 705, 444.
- Brongniartin, mineral, XV. 96.
- BRONTE, in Sicily, V. 676.
- BRONTEION, V. 676.
- Brontes, genus of fishes, XII. 262, 260.
- BRONTOLOGY, V. 676.
- BRONZE, V. 676; VI. 497; VII. 351; XIX. 843—cannon, VI. 181; III. 703; V. 40—casting, 676.
- antiquities of, III. 419; VII. 420.
- period of Archaeology, III. 419.
- Bronzing, V. 677.
- BRONZINO (Angiolo), V. 678.
- Bronzite, mineral, XV. 82.
- BROOKBANK (Joseph), V. 678.
- BROOKE (Frances), V. 678.
- (HENRY), V. 678.
- (Capt.), on aurora borealis in Norway, IV. 249.
- (Mr.), on expansion by electricity, VIII. 589—on the Leyden jar, 613.
- (Lieut.), his mode of sounding, XVII. 576; XX. 26.
- (Mr.), his photographic register, XIV. 666.
- (Sir James), V. 48, 49, 50.
- (Sir Arthur de Capel), on Lapland, XIII. 235 *et seq.*
- Brooke's steelyard electrometer, VIII. 619.
- BROOKES (Bartholomaeus Heinrich), V. 678.
- (JOSHUA), V. 678.
- Brookite, mineral, XV. 110.
- BROOKLYN, V. 678; XIII. 683; XVI. 223.
- BROOM, V. 678—Dyers', VIII. 297.
- (Loch), XIX. 794—fishery of, 427; IX. 640, 642.
- BROOM-FLOWER, order of knights of, V. 678.
- Broom-rape order of plants, V. 202.
- BROOME (William), English poet, V. 678—his share in Pope's version of the Odyssey, XVIII. 330.
- BROOMING of a ship, V. 679. See Breaming.
- Brora, in Sutherlandshire, coal-field of, V. 236; XX. 841.
- Broschus, genus of insects, IX. 91.
- BROSE, V. 679.
- BROSELEY, V. 679.
- Brosminius, genus of fishes, XII. 270.
- BROSSARD (Sebastien de), V. 679.
- BROSSES (Charles de), V. 679—on the division of the lands and islands of the Austral world, IV. 251.
- Brosset (M.), on the language of Georgia, X. 569.
- BROTHER, V. 679—foster-brothers, *ib.*—brother-german, X. 570—Brothers of the Rosy Cross, V. 680—duties of brothers and sisters, XV. 569.
- Brotherhood, opposed to Cursing and Swearing, order of, XIII. 121.
- Brotherhood (Holy), XX. 465.
- Brotherton tubular bridge over the Aire, XII. 609.
- BROTIER (Gabriel), V. 680.
- Brotula, genus of fishes, XII. 270.
- Brouand (T.), his entomological work, IX. 17.
- BROUGH, in Westmoreland, V. 680; XXI. 843.
- Hill, fair at, XXI. 842.

BRO—BRO

- Brougham (Lord), on the balance of power, IV. 388, *n.* 389, 390—on the droits of the Admiralty, V. 630—his education bill in 1820, 630—his motion on the influence of the Crown, 635—his resolution for the removal of taxes, 636—attack on Canning, 639—on the inequality of the Irish law, *ib.*—his defeat in Westmoreland, 647—his motion for law reform, 652—on the law of divorce, VIII. 71, *n.* 1, 72, *n.* 1—on the law of copyright as regards foreigners, VII. 361—his alterations in the law of bankruptcy, IV. 417—on Dr Black as a lecturer, I. 927—his investigations on light, 893; XVI. 544—on instinct, XII. 391—on the Earl of Chatham, XVII. 724—on Dr Robertson, XIX. 229, 231 *n.* 3—on Lord Stowell, 826—on Sheridan's political life, XX. 109—his act against the slave trade, 323—motion for the abolition of slavery, 253; of slave apprenticeship, 326—on Adam Smith's appointment to the Excise, 342, *n.* 5—on natural religion, XXI. 181—on Wilberforce, 865; Washington, 765.
- Hall, XXI. 844.
- BROUGHTON (Hugh), V. 680.
- (Lord), on Rome, XIX. 362, *n.* 1, 365, 366, 367.
- (THOMAS), V. 680.
- BROUKHUSIUS (Jan), V. 680.
- Broun (Mr.), on the moon's influence on the magnetic needle, XIV. 19.
- BROUNCKER (William, Lord), V. 680—on the quadrature of the circle, XX. 523.
- BROUSSA, or Brusa, in Anatolia, V. 680.
- BROUSSAIS (François Joseph Victor), V. 681.
- BROUSSONET (Pierre Marie Auguste), naturalist, V. 681.
- Brown (Capt.), on iron cables and rigging, XX. 23.
- (Charles B.), his novels, XIX. 278.
- (JOHN, D.D.), English divine, V. 681.
- (JOHN, D.D.), author of the Self-interpreting Bible, V. 682.
- (JOHN), founder of the Brunonian theory of physic, V. 682.
- (J. B.), his account of Montreal, VI. 133.
- (Mr.), engraver, VIII. 808.
- (ROBERT), founder of the sect of Brownists, V. 682, 688; XII. 368.
- (Robert), on active molecules, III. 205, 206, *n.* 1—on the areola or nucleus of a cell in plants, II. 783—on the plants of Australia, IV. 261.
- (R.), of Manchester, his method of ventilating by means of gas, X. 427.
- (Dr Samuel), his alleged conversion of carbon into silicon, VI. 447—on the character of D. Scott, painter, XIX. 812.
- (Sir Samuel), his chain bridge across the Tweed, I. 875, *n.* 3—chain-piers at Brighton and Newhaven constructed by, V. 367; XI. 223.
- (Stephen), lord-mayor of London, XIII. 114.
- (Dr THOMAS), metaphysician, V. 683—his observations on Darwin's Zoonomia, I. 410—his tract on Causation, *ib.*—assisted in establishing the Academy of Physics in Edinburgh, 411—on the benevolent affections, 297—Welsh's Life of, 410, *n.* 2—his studies and character, 411—style, 412—his propensity to quote poetry, *ib.*; particularly that of Akenside, II. 434—his poetical character, I. 413—his philosophy, *ib.* *et seq.*—on alliteration, II. 593—on second sight, III. 318—on apparitions, *ib.*—on rectitude and virtue, XV. 536—on Dr Adam Smith's theory of rectitude, 546—his theory of moral distinctions, *ib.*—his refutation of an argument on rectitude erroneously ascribed to Cudworth, 549—on selfish actions, 553—on metaphysics, XIV. 565, *n.* 5, 567, 569—on Adam Smith's theory of moral sentiments, XX. 339, and *n.* 2.
- (THOMAS), poet, V. 683.

BRO—BRU

- Brown (Thomas), his improvements in capstans, VI. 225.
- (ULYSSES MAXIMILIAN), general, V. 684.
- (Dr William), on Hindu converts to Christianity, XV. 273.
- (WILLIAM), English poet, V. 685.
- (WILLIAM LAURENCE, D.D.), V. 685.
- dyeing of, VIII. 307, 320—varieties of, XV. 59—people of that colour, VII. 222.
- spar, XV. 92.
- BROWNE (Edward), V. 686.
- (ISAAC HAWKINS), V. 686.
- (JAMES), LL.D., V. 686.
- (Sir THOMAS), V. 686—on the camelion, XIX. 37, *n.* 2—on the medical uses of the Echini, XXI. 990—quotation from, 991, *n.* 2.
- (Sir WILLIAM), V. 687.
- (WILLIAM GEORGE), V. 687—on the sources of the White Nile, XVI. 269.
- on the guana, XIX. 34.
- BROWNIE, V. 687; I. 464.
- BROWNISTS, religious sect, V. 688, 682.
- Brownlee (James), on the density of steam, XX. 560—on gaseous steam, 570—his formulas for the work and heat of dry saturated steam, 626.
- BROWNRIGG (William), V. 688.
- BRUAR, Falls of, V. 688; IV. 751.
- Bruce (Alex.), advocate, his writings against Wodrow, XXI. 897.
- (Edward), his invasion of Ireland, XII. 470; VIII. 217.
- (JAMES), V. 688—his travels in Abyssinia, II. 55, 57—on the hyænas of Abyssinia, XIV. 167, 168—on the Jerboa, 185—on the sources of the Bahr-el-Azrek, XVI. 269—his argument for polygamy, XVIII. 266—on the balsam of Mecca, IV. 401—on tortoise-shell, XIX. 20—on lizards, 27—on the cerastes, 45—on the inundations of the Nile, 181.
- (MICHAEL), poet, V. 691.
- (King ROBERT), V. 691; XIX. 755; VIII. 239, 258—Barbour's poem on, IV. 434.
- (Robert), on the tea-plant in Assam, III. 763; XXI. 81.
- Bruchelæ, tribe of insects, IX. 137.
- Brucher (Antoine), inventor of the coining-press, VII. 71.
- BRUCHSAL, in Baden, V. 691.
- Bruchus, genus of insects, IX. 138.
- Brucia, poison, XIV. 438.
- Brucite, mineral, XV. 80, 89.
- BRUCK, in Austria, V. 691.
- BRUCKENAU, in Bavaria, V. 691.
- BRUCKER (James), V. 691—estimate of his talents, I. 283.
- Brückmann on birds, XVI. 728.
- Brue, river, XX. 410.
- Brueys, French admiral, V. 564; XVI. 135.
- BRUGES, Belgian city, V. 693—commerce of, VII. 187—early newspaper of, XVI. 202—the seat of the chief factory of the Hanseatic League, XI. 215.
- Brugmans, diamagnetism obscurely anticipated by, I. 981.
- Brugsch (Dr Heinrich), on demotic characters, XI. 371 *n.* 7, 377 *n.* 3, 430—his Grammaire Démotique, 409, 431—funereal papyrus published by, XVII. 264.
- Bruglière, reference to his arrangement of animalcules, III. 199.
- BRUN, or Bruyn (John de), V. 694.
- Bruise, surgical treatment of, XX. 830.
- Brullé (A.), his works on insects, IX. 17.
- BRULLIOT (Franz), V. 694.
- BRUMBY (Pierre), V. 694.
- BRUN (Charles le), painter, V. 695; XVII. 76; XXI. 20.
- (Pigault le), character of his novels, XIX. 289.
- or BRUNN (Malte-Conrad), modern geographer, V. 695; XIX. 696—on the birds of Brazil, V. 294—on the climate of Asia, III. 737—on the languages of Lapland, XIII. 244.
- (Johan Nordal), Danish author, XIX. 693.

BRU—BRU

- Brunanburgh, battle of, VIII. 658.
 BRUNCK (Richard François Philippe), V. 695.
 BRUNDISIUM, V. 695, 367.
 Bruneau, X. 4, 5, 6.
 BRUNEL (Sir Marc Isambart), V. 695—biographical sketch of, I. 878—his block-machinery, 879; IV. 783 *et seq.*—impulse given by his ingenuity to mechanics, I. 879—construction of the Thames Tunnel by, *ib.*—variety of his works, 880—a diving adventure of, VIII. 56—his saw-mill at Chatham, 81.
 —(I. K.), iron bridges constructed by, XII. 601—his assistance in forming the Thames Tunnel, V. 696—his introduction of the broad gauge on the Great Western Railway, XVIII. 753; I. 885, *n.*
 BRUNELLESCHI (Filippo), V. 696; III. 450—his architectural designs, 452.
 Brunet (J. C.), his Bibliographical Manual, IV. 714.
 —Bonaparte satirised by, VIII. 156.
 BRUNI (Leonardo), V. 696.
 Bruniaceæ, nat. order of plants, V. 194.
 BRUNN, in Moravia, V. 696.
 Brunne (Robert de), VIII. 795. See Man-nyng.
 Brunner (J. C.), his anatomical discoveries, II. 763.
 Brunnich (M. Thomas), his entomological works, IX. 6—his classification of entomologists, *ib.*—his Ornithologia Borealis, XVI. 728.
 Brünnig's (M.), his tachometer, XII. 143—experiments in hydraulics, 144, 145.
 BRUNO, founder of the Carthusian order of monks, V. 697.
 —(GIORDANO), V. 697—his pantheistic system, XVII. 233.
 Brunoniaceæ, nat. order of plants, V. 197.
 Bruns (Paul James), a decipherer of palimpsests, XVII. 210.
 BRUNSWICK, V. 697; X. 589, 591, 593; XII. 210—coins of, XV. 441, 443—postal system, XVIII. 424—weights and measures, XXI. 810.
 —(Frederic-William), Duke of, killed at Quatre Bras, V. 698.
 —in Maine, V. 698.
 BRUNTISLAND, V. 698. See Burntisland.
 Brunton's gas retort, X. 412.
 —revolving grate, XX. 355.
 Brusa, in Turkey, XXI. 380, 381—manufactures of, 383—silk, 384.
 BRUSH, V. 698—tail of a fox, *ib.*—brush-wheels, *ib.*
 Brushing, process in woollen manufacture, XXI. 923.
 BRUSSELS, V. 698—revolutionary troubles in 1830, IV. 603, 604; XI. 580—attempted entrance of the royal troops in 1830, IV. 605—university of, 620; XXI. 492—academies at, IV. 622—lace, XIII. 142, 143—carpets, VI. 271—national congress at, IV. 606—military court at, 614—Jewish synagogue at, 617—royal musical conservatory, 622—library, 623—museum of, 623—libraries, XIII. 422—meteorological observations at, XIV. 687—early newspapers of, XVI. 202.
 Brussels' sprouts, culture of, XI. 737.
 BRUTE, V. 700—Buffon on the faculties of brutes, I. 177—instincts of, XII. 391—language of, XIII. 185—better provided than man with the means of supplying their own wants, I. 452—worship of, in Egypt, VIII. 439; XV. 765. See Comparative Anatomy, Animals, Brain of the Lower Animals, and the zoological articles.
 BRUTON, town in Somerset, V. 704.
 BRUTII, V. 704.
 BRUTUS, or Brute, a fabulous king of Britain, V. 704.
 —(LUCIUS JUNIUS), V. 704; XIX. 297.
 —(MARCUS), V. 704; XIX. 327, 329—apparition seen by him at Philippi, III. 310 and *n.* 3.
 Brûx, Bohemian city, V. 704.

BRU—BUC

- Bruyère (William), his iron bridges, XII. 581-82.
 BRUYÈRE (Jean de la), V. 704—on Rabelais, XVIII. 742—his version of Theophrastus, XXI. 220.
 BRUYN (Cornelius), V. 705.
 Bryaceæ, sub-order of mosses, V. 217.
 BRYAN, or Bryant (Sir Francis), V. 705.
 Bryanites, or Bible Christians, XIV. 694.
 BRYANT (Jacob), V. 705—on the deluge, VII. 711-15—on mythology, 711—his hypothesis on the dispersion of mankind, VIII. 45—on the Amazons, II. 650.
 BRYAXIS, Athenian statuary, V. 706.
 —genus of insects, IX. 153.
 Brycinus, genus of fishes, XII. 246.
 Brydon of Moodlaw's Cheviot sheep, II. 347.
 Brydone's account of Mount Ætna, II. 189, 190—Dr Daubeny's strictures on his opinion as to the antiquity of its lava beds, 192—his account of a destructive cloud, VII. 39.
 BRYENNIUS (Manuel), V. 706.
 BRYONIA DIOICA, plant, V. 706, 193.
 Bryony, black, V. 210.
 BRYOPHYLLUM, genus of plants, V. 706, 94, 194.
 Bryozoa, fossil animals, XVII. 97.
 Bryson, geometer, X. 498—on the quadrature of the circle, XX. 520.
 Bryson's siphon barometer, IV. 461—his hourly barometric register, *ib.*
 Bryttus, genus of fishes, XII. 277.
 BRZESC, town in Russia, V. 706.
 BRZEZANY, in Galicia, V. 706.
 BUA, island, V. 706.
 BUAT-NANÇAY (Louis-Gabriel, Count du), V. 706.
 —(Chevalier de). See Dubuat.
 BUBASTIS, one of the names of Isis, V. 706; VIII. 437, 498.
 —Egyptian city, VIII. 498.
 Bubble-shell, XV. 373.
 Bubo, genus of birds, XVI. 746.
 BUBONA, V. 707.
 BUBULCUS, V. 707.
 BUC (Sir George), V. 707.
 BUCANEER, V. 707; XI. 255—of the Musquito shore, XV. 660.
 BUCCARI, in Austria, V. 713.
 BUCCELLARI, V. 713.
 BUCCINA, ancient kind of trumpet, V. 713.
 Buccinidæ, family of mollusks, XV. 386.
 BUCCINO, Neapolitan city, V. 713.
 Buccinum, genus of mollusks, XV. 386, 389—dye from, VIII. 272; XX. 906; XXI. 407.
 Buccleuch (Duke of), his rental, VIII. 237—lands in Dumfriesshire, *ib.*—his policy adverse to manufactures, XI. 247—letting of his farms in Roxburghshire, XIX. 455.
 Bucco, genus of birds, XVI. 778.
 Buccellas, wine, XXI. 885—alcohol in, 890.
 BUCENTAURO, V. 713.
 BUCEPHALA, V. 713; XIII. 769.
 Bucephalus, genus of serpents, teeth of, XVI. 432.
 BUCER, or Martin Kuhorn, V. 713; XIII. 725, 739, 740.
 Buceros, genus of birds, XVI. 773.
 BUCH (Leopold Von), V. 713—on the elevation of the coasts of Sweden, XX. 860—on the regions of vegetation in Teneriffe, VI. 164—on the geology and botany of Lapland, XIII. 234, 235 *et seq.*
 BUCHAN, district of, V. 714; II. 32.
 —(Capt. David), his arctic voyage, XVIII. 171.
 —(Dr), unusual case of atmospheric refraction described by, XVI. 691.
 —(Mrs), fanatic, IX. 481.
 BUCHANAN (George), V. 714—character of his work *De jure Regni apud Scotos*, I. 31—Ruddiman and Burman's editions of his works, V. 788; XIX. 461—his Latin version of the Psalms, XII. 803—his scholarship, XVII. 523.
 —(A. C.), on the prospects of emigrants to Canada, VI. 148.

BUC—BUE

- Buchanan (Dr), of Louisville, U.S., on phreno-mesmerism, XX. 440.
 —(Dr F.), on the inhabitants of eastern Asia, III. 748—on the inhabitants of Canara, VI. 162.
 —(President of United States), on banking, XV. 493.
 —(W. M.), on the temperature and pressure of steam, XX. 565.
 BUCHAREST, in Wallachia, V. 721; XXI. 683.
 BUCHOLZ (Christoph Friedrich), V. 721.
 Bucholzite, mineral, XV. 86.
 BUCK, V. 721.
 BUCKEBURG, German city, V. 721.
 Bucket, safety, XIII. 448.
 Bucket-wheels, XII. 167, 183.
 Buckharia. See Bukhara.
 Buckhounds, master of, XI. 776.
 BUCKIE, village in Banff, V. 721.
 BUCKINGHAM, V. 721.
 —(Dukes of). See Villiers and Sheffield.
 —(J. S.), on the ruins of Babylon, IV. 345—on Baghdad, 362, 363—Diarbekir, VIII. 6—Palestine, XVII. 188—his transportation from Calcutta, XVI. 203.
 —Palace, XIII. 668—effect of smoke on the walls of, XX. 712.
 BUCKINGHAMSHIRE, V. 721—population and value of property, VIII. 754.
 Buckland (Dr), his Bridgewater Treatise, V. 364—on the Deluge, VII. 722—on the value of the produce of British mines, XV. 247—on the dentition of the Megalosaurus, XVI. 434—on the teeth of Iguanodon, 435, 436—on the coprolites of the cave at Kirkdale, 460—on the Plesiosaurus, XVII. 146—on the vegetation of the carboniferous period, 641.
 Bucklandite, mineral, XV. 85.
 Buckle (Mr), his eulogium on Smith's Wealth of Nations, XVIII. 223, *n.* 2; XX. 341—on suicide, 800.
 BUCKLER, V. 722—votive bucklers, 723.
 Buckwine, IV. 314, 309.
 BUCKRAM, V. 723.
 Buckthorn, order of plants, V. 189.
 —XVII. 762.
 —sea, V. 205; XVII. 764.
 Buckwald (B. J.), his work on insects, IX. 4.
 BUCKWHEAT, V. 723, 204; II. 302; XVII. 630—its culture in France, X. 246.
 —order of plants, V. 204.
 BUCOLIC, V. 723.
 BUCOVAR, in Hungary, V. 723.
 Bud and Budding. See Buds.
 BUDA, in Hungary, V. 723—wines of, XXI. 886.
 BUDÆUS, or Budé (Guillaume), V. 723—character and works of, I. 29, *n.* 7; XVII. 523.
 BUDDÆUS (John Francis), V. 723.
 BUDDHA, or Buddhu, Hindoo deity, V. 723; VII. 715, 716; XV. 762—sacred books of, X. 722—his worshippers in Ceylon, VII. 397—in India, XI. 468—in Japan, XII. 695—in Canton, VI. 200—in Tibet, XXI. 247.
 Buddicom, his valve-gearing of locomotives, XX. 585.
 BUDE-LIGHT, V. 725; X. 427.
 BUDGELL (Eustace), V. 725.
 BUDGET, V. 725; VI. 412.
 Budissin, in Saxony, IV. 514.
 BUDNÆANS, heretics, V. 725.
 Buds, flower-bud, V. 121—leaf-buds, 78—propagation by, 167—propagation by budding, XI. 694, 704.
 BUDUN, Ceylonese deity, V. 725.
 Buduschan, IV. 359.
 BUDWEIS, in Bohemia, V. 725.
 Budytes, genus of birds, XVI. 757.
 BUENAIRO, island, V. 726.
 BUENOS-AYRES, V. 726; II. 704—climate of, 673—taken by the British in 1807, V. 602—failure of General White-lock's attack, *ib.*—British consul at, VII. 337—foundation and history of, XVII. 780—founded by Mendoza in 1535, II. 699—pampas of, 672; III. 129;

BUF—BUK

- XVII. 608—weights and measures, XXI. 810.
 Buff-colour, dyeing of, VIII. 318.
 Buff leather, XIII. 305.
 BUFFALMACCO, Florentine painter, V. 728; XVII. 62.
 BUFFALO, V. 728; XIV. 215; XVII. 632—in Java, XII. 704—Egypt, VIII. 432—Sumatra, XX. 804—fossil, XVII. 170.
 —city in the state of New York, V. 728; XVI. 219—harbour of, 214.
 Buffalo-fish, XII. 301.
 BUFFET, V. 728.
 BUFFIER (Claude), V. 729—mistake of, relative to a theory of Descartes, I. 63 and *n.* 4—coincidence between his train of thinking and that of some Scottish metaphysicians, 215—his treatise on First Truths, 357—his style and ethical doctrines, 358—Voltaire's opinion of, 215, *n.* 2—his theory of beauty, IV. 539.
 BUFFON (George Louis le Clerc, Comte de), V. 729—on the faculties of man and brutes, I. 177-78—on the nature of mathematical evidence, 178—on the soul, III. 172—on the original diversity of species, 174—his definition of species, *ib.*—on animalcules, 204—his theory of the formation of bees' combs, IV. 578—his burning mirrors and lenses, VI. 5, 7, 12, 13; XIII. 472—his connection with Daubenton, VII. 662; their characters contrasted, *ib.*—on the horse, XI. 633—on hybrids, XII. 63—his connection with Lacépède, XIII. 146—tables of mortality published by, XV. 633—Sir J. Leslie's translation of his Natural History, XIII. 344—his work on the natural history of animals, XIV. 127—on birds, XVI. 729, 775, 780, 806—on probability, XVIII. 622—Smellie's translation of his Natural History, XX. 337—his experiments on the strength of oak bars, 773; observations on, 774; practical rule deduced from, 776—on the age for felling timber, XXI. 270; season and mode of, 273, 274—on the production of entozoa, 975.
 BUFFON, V. 729.
 Bufo, genus of reptiles, XIX. 79.
 Bug, V. 729—harvest-bug, III. 389—bed-bug, IX. 163; mode of destroying, XXI. 549—wood-bugs, IX. 161.
 BUGABES, kind of heretics, V. 729.
 Bugeaud (General), governor of Algiers, II. 575.
 BUGIA, in Algeria, V. 730.
 Bugis, race of people in Celebes, III. 749; V. 7—their commerce, III. 756.
 BUGLE-HORN, V. 730.
 BUHL, V. 730.
 Buhle (C. A. A.), his works on insects, IX. 20.
 —(M.), on Kant's Critique of Pure Reason, I. 190 and *n.* 1—his remarks on Cudworth, 191, *n.* 1—on Kant's argument for free agency, 197, *n.* 1—his History of Modern Philosophy, 283.
 Buhr-stones, rock of the Abbey Craig, near Stirling, a substitute for, VI. 750.
 BUILDER, V. 730.
 BUILDING, V. 730—transmission of sound by stone, II. 101—deadening of sounds in rooms, 106—calc-tuff as a building stone, VI. 68—Purbeck and Portland stones, VIII. 111—expansion of building materials by heat, XI. 268—strength of different kinds of wood, XX. 170, 171, 172, 757, 779 *et seq.*; and of stone, 717, 718, 758. See Architecture, Carpentry, Joinery, Stone-Masonry, Brick, Timber.
 Buildings for a library, XIII. 377.
 Buildings, lightning conductors for, VIII. 609—warming of, XIX. 613.
 Buildwas iron bridge, V. 363; XII. 576, 578.
 BUILTH, town in Brecknockshire, V. 757, 812.
 Buist (Robert), on parr and smolts, IX. 593, 595, *n.* 1—on the destruction of salmon ova by trout, 617.
 BUKHARA, V. 757, 759—climate of, III. 736—commerce of, 755—language, XIII. 216. See Turkestan.

BUK—BUN

BUKKUR, island and fort of Scinde, V. 760.
 BUL, Hebrew month, V. 760.
 BULAK, V. 760; VI. 61.
 BULAM, or Bulama, V. 760; IV. 735.
 BULARCHUS, V. 760.
 BULB, V. 760, 79—pseudo-bulb, 78.
 — of thermometers, XXI. 221.
 Bulboceras, genus of insects, IX. 121.
 Bulbous plants, XI. 749—in South Africa, XVII. 629.
 Bulfinger on the strength of beams, XX. 765.
 BULGARIA, in European Turkey, V. 760—coast and ports of, IV. 742—language of, IX. 391; in Greece, XI. 22.
 Bulgarians, their wars with the Roman emperors, VII. 313.
 Bulimus, genus of mollusks, XV. 375.
 Bulinus, genus of mollusks, XV. 373—*B. ovatus*, 389.
 BULK, of a ship, V. 760—bulk-heads, *ib.*; XX. 197.
 BULL, V. 760; XIV. 214—breeding, II. 341—importance of the pedigree, 343—origin of the sign of the Bull and Mouth, III. 323—reckoned sacred by the Hindus, IV. 644.
 — (GEORGE), bishop, V. 761.
 — (JOHN), V. 761.
 — ecclesiastical letter, V. 760—in *Cœna Domini*, 761—Golden, *ib.*—Silver, *ib.*—Leaden, *ib.*—Waxen, *ib.*
 BULL-FIGHT, V. 761—in Spain, XX. 494.
 BULL-FROG, V. 762; XIX. 77.
 BULL-HEAD, fish, V. 761; XII. 280.
 Bull-trout, IX. 616; XII. 240—its flesh, IX. 763—its increase in the Tweed, IV. 680.
 BULLA, V. 761—genus of mollusks, XV. 372, 375—*B. vexillum*, *ib.*—fossil, XVII. 111.
 Bullæa, genus of mollusks, XV. 372.
 Bullet, XI. 104 *et seq.*
 BULLEYN (William), V. 761.
 BULLFINCH, V. 762; XVI. 761.
 BULLIALDUS (Ismael), astronomer, V. 762—on astronomy, I. 611.
 BULLINGER (Heinrich), V. 762.
 BULLION, V. 762; VII. 77—how supplied to the mint in former times, *ib.*—value of, in different countries, IX. 430, 431—quantity consumed in the arts, XVIII. 466—annual consumption of, as currency, *ib.*—additions made to that of Europe since 1851, 474—Influence of an increased supply of, on wages and on its own value, 475—Sir Robert Peel chairman of the Bullion Committee, XVII. 362—Ricardo and Bosanquet on, XIX. 153.
 Bulloa, in India, XXI. 284.
 Bulmer, printer, XVIII. 539—his printing ink, 545.
 Bulnes (General), VI. 553.
 Bulrush order of plants, V. 214.
 BULTI, or Bultistan, V. 762.
 Bulwark of a ship, XI. 160.
 Bulwer (Sir Edward Lytton). See Lytton, (Sir E. B.)
 — (Sir H. L.), Lord Palmerston's instructions to, in reference to Spain, XX. 482.
 BUMM, Persian town, V. 762.
 BUMPKIN, V. 762.
 Bunarbashi, village in Asia Minor, XXI. 357.
 Bundelas, V. 762, 763.
 BUNDELCUND, in Hindustan, V. 762.
 BUNDER-ABBAS, V. 764; X. 709.
 Bundoolah (Maha), V. 646.
 BUNEL (Pierre), V. 764.
 BUNGALOW, V. 764.
 Bungarus, genus of reptiles, XIX. 64.
 BUNGAY, town in Suffolk, V. 764.
 Buniya (M.), his work on insects, IX. 11.
 BUNKER-HILL, in Massachusetts, V. 764; VI. 425—battle of, V. 481—monument on, XXI. 796.
 Bunsen (Chevalier), on Egyptian deities, VIII. 436, *n.* 4—on Clemens Alexandrinus, XI. 376 and *n.* 2, 4—on Egyptian inscriptions, 380, *n.* 3—on the Egyptian

BUN—BUR

language, 412—his criticism on Dr Young, 408—his work entitled *Egypt's Place*, 431—his kindness to Leopardi, XIII. 338—on Hippolitus and his age, XI. 534—on the Gnostic sect Ophites, X. 688—his intimacy with Mr Hare, XI. 227—on the composition of trachyte and dolerite, XV. 132—on the volcanic rocks of Iceland, 133—his philological speculations, XVII. 534—on the importance of ethnological philology, 542.
 Bunsen (Prof.), his photometer, X. 429—his theory of the eruption of the boiling springs of Iceland, XII. 201—his galvanic battery, XXI. 617.
 Bunt, a disease in wheat, V. 171; II. 306.
 Bunter Sandstein, XV. 205.
 BUNTING, bird, V. 764; XVI. 760—stuff used for flags, V. 764.
 BUNTINGFORD, in Hertford, V. 764.
 BUNYAN (John), V. 764—his *Pilgrim's Progress* an example of well-sustained allegory, II. 588.
 Bunyon (Mr), on life assurance, XII. 411.
 BUNZLAU, V. 768.
 Buonarrotti. See Michel Angelo.
 BUOY, V. 768—life-buoy, *ib.*; XIII. 439, 440.
 BUPALUS, sculptor, V. 768.
 Buphaga, genus of birds, XVI. 762.
 BUPHONIA, ancient festival, V. 768.
 Buprestides, family of insects, IX. 104.
 Buprestis, genus of insects, IX. 105.
 Buquet (Lucien), his contributions to entomology, IX. 21.
 Buratite, mineral, XV. 103.
 BURBOT, fish, V. 769; XII. 269; III. 95.
 Burchell on the zebra, XIV. 202.
 BURCKHARDT (John Ludwig), V. 769—his account of Arabia, III. 346 *et seq.*—his journey through Idumæa, XII. 358—on manna, XIV. 267—Petraea identified by, XVII. 495—on Syria, XX. 901.
 — on comets, IV. 75, 76—on the tides, XXI. 763.
 BURDEN, or Bourdon, in music, V. 769.
 — of a ship, V. 769.
 BURDER (George), V. 769.
 BURDETT (Sir Francis), V. 769—his commitment to the Tower, 608—his bill in 1825 for the relief of the Catholics, 642—his motion on that subject in 1828, 652.
 — executed at Tyburn, VIII. 692.
 Burdin (M.), prize offered by, to those who could read while in mesmeric sleep without the use of the eyes, &c., XX. 429, 430—no candidate for, 430.
 Burdon (Rowland), his iron bridge at Sunderland, III. 414.
 BURDWAN, in Hindustan, V. 770; IV. 651—coal of, XI. 457.
 Bure, (G. F. de), his work on bibliography IV. 713.
 — river in Norfolk, XVI. 289; XXI. 953.
 Buren (Martin Van), XXI. 441.
 BURFORD, in Oxfordshire, V. 770.
 BURG, town in Prussian Saxony, V. 770.
 BURGAGE, a form of tenure, V. 770; XV. 682.
 BURGER (Gottfried Augustus), V. 770; XIX. 718.
 BURGERSDICUS, or Burgersdyk (Francis), V. 771; XV. 539—allusion to, in the *Dunciad*, *ib.*, *n.* 2—contents of his *Institutiones Metaphysicæ*, XIV. 604, *n.* 2—on syllogisms, XIII. 611, *n.*
 BURGESS, V. 772—burgesses in Sweden, XX. 865—burgesses returned to the House of Commons by University of Oxford, XXI. 456—House of, in Virginia, 747, 748.
 — (DANIEL), V. 772.
 — (Right Rev. THOMAS), bishop of Salisbury, V. 772.
 BURGRAVE, V. 772.
 Burgh, or Dun, VIII. 244.
 — royal, in Scotland, V. 54.
 — police, XVIII. 203.
 — in Suffolk, Roman castle at, XX. 791.

BUR—BUR

BURGHBOTE, V. 772.
 BURGHBRECH, V. 772.
 Burghers, XVIII. 499—their reunion with the Antiburghers, 500.
 BURGHMOTE, V. 772.
 BURGMAIR (Hans, or John), V. 772.
 BURGLARY, V. 772.
 Burgo (Lucas de), author of the first printed book on algebra, II. 484; X. 504.
 — (Sir Richard de), on the value of the Irish salmon fisheries, IX. 622.
 BURGOMASTER, V. 772.
 Burgon (Mr), on numismatics, XVI. 354 *et seq.*
 BURGONET, ancient helmet, V. 772.
 BURGOS, in Spain, V. 772—Wellington's attacks on, 612; receives a check at, XXI. 825.
 Burgoyne (General), V. 466, 476—his disaster at Saratoga, 483; XXI. 751—favourable result of enquiry into his conduct in America, 487—his opinion against the continuance of the American war, 497.
 — (Sir John), on blasting rocks, IV. 755.
 BURGUNDIONES, V. 773.
 BURGUNDIUS (Nicholas), V. 773.
 BURGUNDY, V. 773; X. 277—wines of, XXI. 883—canal of, X. 244.
 — House of, Portuguese dynasty, XVIII. 392.
 — (Dukes of), X. 26 *et seq.*; XI. 561; XX. 884.
 BURHAMPOOR, town in Hindustan, V. 773.
 BURHILL, or Burghill (Robert), V. 773.
 Buri (Cassandra), VIII. 571.
 BURIAL, V. 773—proportion of burials in England to the population, VIII. 755—registration of, XVIII. 831—burying places, VI. 22; XIV. 444; XIX. 619—burying alive, VI. 22—ceremonies connected with, X. 343.
 BURIATS, tribe of Tartars, V. 774.
 BURIDAN (Jean), V. 774.
 BURIGNY (Jean Levesque de), V. 774.
 BURIN, an engraving instrument, V. 774.
 BURKE (Edmund), V. 774—his patronage of Barry, IV. 476; and of Crabbe, VII. 474—his theory of beauty, IV. 538—on the partition of Poland, 392—his plan for introducing public economy, V. 489; XI. 773—speech against the American war, V. 497—attack on Sir Elijah Impey, 514—his proceedings against Warren Hastings, 520—oration of five days against Mr Hastings, 529—on the French Revolution, 535—his treatise against the French Revolution, 537; XIII. 785—Dr Brocklesby's kindness to, V. 674—on the corporation and test acts, 536—on the Canada bill, 537—his quarrel with Mr Fox, *ib.*—his intimacy with Mr Fox, IX. 851—his corn-act of 1773, VII. 380—on the limits of legislation, XIII. 267—on the expense of elections, VIII. 770—on Law's Mississippi scheme, XIII. 295—his character of Sir Joshua Reynolds, XIX. 102—on Rousseau, 449—his opinion of Dr Thomas Young, XXI. 963. See Pitt, Fox.
 BURKITT (William), V. 778.
 BURLEIGH, V. 778. See Cecil.
 Burlers, XXI. 914, *n.* 2, 913. See Burling.
 BURLESQUE, V. 778.
 Burling, in woollen manufacture, XXI. 922.
 BURLINGTON, V. 778, 365.
 — in the state of Vermont, V. 778.
 — in New Jersey, V. 778.
 — in the state of Iowa, V. 778.
 — (Earl of), his merits as an architect, III. 455.
 BURMAH, V. 778; III. 735—climate of, 737—war with the East India Company in 1824, V. 646; XI. 508—river system of, XVII. 607—wars with Pegu, 367—language of, XIII. 206—empire of, XV. 412—weights and measures of, XXI. 810.

BUR—BUR

BURMAN (Caspar), V. 785.
 — (FRANCIS), biblical critic, V. 785.
 — (FRANCIS), theologian, V. 785.
 — (JOHN), physician, V. 785.
 — (PETER), philologist, V. 785—his edition of Buchanan's works, 720; of Petronius, XVII. 501.
 Burmanniaceæ, nat. order of plants, V. 211.
 Burmeister (H.), his entomological works, IX. 20—on the cirripeds, XV. 319.
 Burn (Colonel), his tables of ranges for ordnance, XI. 146, 148, 149.
 — (Dr), extract from his *Justice of the Peace*, VII. 377, *n.*
 Burners (Gas), X. 424—ventilation of, 427.
 Burnes (Dr), on the diseases of Cutch, VII. 597, 598.
 — (Sir A.), murdered by the Afghans, V. 667; II. 208—on Bukhara, V. 759, 760.
 BURNET (Thomas), V. 790—on the Deluge, VII. 719.
 — (GILBERT), bishop of Salisbury, V. 791—on Buchanan's History, 720—his characters of Lord Stair, VII. 632; of John and William Forbes, IX. 776, 777—his *Life of Bishop Leighton*, XIII. 323, 324—on the Earl of Rochester, XXI. 873.
 — (JAMES), Lord Monboddo, V. 793—on the origin of language, II. 605; XIII. 186.
 — forage plant, II. 329.
 Burnett (Sir William), his method of preserving timber, V. 173; VI. 491; XX. 167; XXI. 279.
 — (C. J.), his photographic processes, XVII. 551.
 — (Mr), on Turner's style of painting, XXI. 388, 389.
 — (Mr), on the exhalation of carbonic acid by plants, V. 105.
 BURNEY (Charles), doctor of music, V. 793—on Chinese music, VI. 581.
 — (CHARLES), historian of music, V. 795—his MSS. in the British Museum, XIII. 392—on the Arabian musical scale, XV. 708—on Handel, XI. 207.
 — (FRANCES), novelist, V. 795—character of her novels, XIX. 279.
 BURNING, V. 795—of the dead, *ib.*—burning fountains, X. 409—death from, XIV. 431—crime of. See Arson.
 BURNING-GLASSES, VI. 1; XI. 275—of Archimedes, III. 430.
 BURNISHER, VI. 16—engraver's, VIII. 802, 803.
 Burnishing, in gilding, X. 625.
 BURNLEY, town in Lancashire, VI. 16.
 Burnouf (Eugène), on the Zend language, XVII. 529—on cuneiform inscriptions, 534.
 BURNS (Robert), VI. 16—Currie's life of, VII. 595—poetry of, XVIII. 125—Lockhart's life of, XIII. 548—his lines on Smellie, XX. 337—his estimate of Smith's *Wealth of Nations*, 341, *n.* 1—festival at Ayr in honour of, XXI. 878—Prof. Wilson on the effects of his poetry, *ib.*
 — (Allan), on the fascia of the neck and chest, II. 824.
 Burnt-clay, as a manure, II. 304—in mortar, XX. 714.
 BURNISLAND, in Fifeshire, VI. 20—ferry, IX. 796.
 Burra-burra copper mine, IV. 295; XV. 238—malachite found in, XVII. 621.
 Burrard (Sir Harry), XXI. 821.
 Burren Sunker, Hindu race, XI. 471; VI. 319.
 Burrey, one of the Orkney islands, XVI. 718.
 Burrough (Stephen), his voyage of discovery, XVIII. 165.
 BURROW (Sir James), VI. 21.
 — (Reuben), on Indian algebra, II. 487.
 Burrowing serpents, XIX. 55.
 Burrows (Dr), on the amount of fluids in the cranium, XVII. 698.

BUR—BUT

Bursa, in veterinary science, XXI. 558—diseased, *ib.*
 BURSAR, VI. 21.
 Bursaria, genus of animalcules, III. 201.
 Bursaries connected with Glasgow College, X. 652; XXI. 478—in University of St Andrews, 475—Marischal College, Aberdeen, 481. See Universities.
 BURSE, VI. 21.
 BURSLEM, town in Staffordshire, VI. 21—potteries at, XVIII. 433; XXI. 797.
 BURTON (John, D.D.), VI. 21.
 — (J. H.), on the judicature of Scotland, XIX. 811.
 — (Lieut.), his account of Mecca, XIV. 378, 379—his pilgrimage to El Medinah and Mecca, XV. 305—his discovery of Lake Tanganyika, XXI. 17.
 — (ROBERT), VI. 21—the first English author that mentions coffee, VII. 54.
 — ale, V. 332.
 BURTON-UPON-TRENT, VI. 21; XX. 531—water of, XIX. 616—ale and beer, XX. 530.
 Burton's Life of Hume, XII. 2 *et seq.*, 6, n. 1, 8.
 BURTSCHIED, town in Prussia, VI. 22.
 Burullus (el), Egyptian lake, VIII. 429.
 BURY, VI. 22.
 — (Richard de), VI. 22. See *Ann-gervyle*.
 — St EDMUNDS, VI. 22; XX. 790, 791.
 BURYING ALIVE, VI. 22.
 — (place), VI. 22.
 — of gold and silver, XVIII. 467, 471.
 BUSACO, a convent in Portugal, VI. 22—battle of, *ib.*; V. 608; XXI. 823.
 BUSBEQ (Augier, Ghislen de), VI. 22.
 BUSBY (Dr Richard), VI. 23.
 BUSCA, town in Piedmont, VI. 23.
 Buschetto, Greek architect, XVII. 60, 716.
 BUSCHING (Anthony Frederick), VI. 23.
 BUSH (Paul), first bishop of Bristol, VI. 23.
 — shrubby plant, V. 78.
 BUSHEL, VI. 24—standard, XXI. 804—number in a boll, 809—Winchester bushel, 807.
 BUSHIRE, or Abuschehr, town in Persia, VI. 24—taken by the British in 1856, XVII. 443—trade of, 444.
 Bushmen of Africa, II. 223; V. 58.
 Bushnell's submarine machine for blowing up vessels, VIII. 59.
 BUSIRIS, town in Egypt, VI. 24; VIII. 497.
 — Egyptian deity, VI. 24.
 BUSKIN, VI. 24; VII. 426; VIII. 135, 137.
 BUSS, VI. 24—a small ship, *ib.*
 BUSSORA, Asiatic city, VI. 24; IV. 364—its commerce, XI. 460.
 Bussy (M.), XI. 483, 485.
 BUST, VI. 25—in numismatics, XVI. 353.
 Bustamante, XIV. 712.
 Bustamite, mineral, XV. 82.
 BUSTARD, bird, VI. 25; IX. 763; XVI. 797—shooting of, XX. 223.
 BUSTUARI, gladiators, VI. 25.
 BUSTUM, VI. 25.
 BUTCHER, VI. 25—erroneously supposed to be excluded from juries, XIII. 24—number of butchers in London, 660; in Scotland, XIX. 804.
 BUTCHER-BIRD, VI. 25; XVI. 748.
 Butcher's meat, in Paris, X. 266.
 — broom, plant, V. 113.
 BUTE (John Stuart), earl of, VI. 25—his resignation as first Lord of the Treasury, V. 467.
 — ship canal at Cardiff, VI. 232.
 Butco, genus of birds, XVI. 744.
 BUTESHIRE, VI. 25—agricultural statistics, XIX. 796, 797, 798—population, 799.
 Butthus, genus of arachnides, III. 385.
 Butirinus, genus of fishes, XII. 250.
 BUTLER, VI. 28.
 — family in Ireland, XII. 473.
 — (CHARLES), VI. 28.
 — (JAMES), Duke of Ormond, VI. 28.
 — (JOSEPH), bishop of Durham, VI. 28—on personal identity, I. 217—notice of his life, 359—his Analogy, *ib.*; II.

BUT—BYR

745; VI. 32—his ethical principles and Discourses, I. 359, 363—his style, 363—on self-love, 296—remarks on Mackintosh's account of his views on the moral sense, 298, 299—coincidence of some of his views with Aristotle's, III. 565, n. 7—on anger, 141—on civil government, 566—compared with Jonathan Edwards, VIII. 417—on virtue, XIV. 623—his theory on the foundation of moral distinctions, XV. 544, 556—his sermons revised by Secker, XX. 30.
 BUTLER (Samuel), author of Hudibras, VI. 34—poetry of, XVIII. 123—examples of wit, from Hudibras, XXI. 894, 895—Wycherley's attempt to benefit him, 942.
 Buto, Egyptian deity, XI. 384.
 Butomaceæ, nat. order of plants, V. 214.
 BUTRINTO, town in Albania, VI. 35.
 BUTT, wine-measure, VI. 35.
 BUTTER, VI. 35, 510; XV. 10, 11—mode of making, VII. 623—average yearly product per cow, 624—butter-dairies, 622—whey butter, 526—Irish, XII. 518—Dutch, XI. 582, 585—quantity exported from Holland, 585—specific gravity of, XII. 88.
 — chemical preparation once so called, VI. 35.
 — (Nathaniel), early newspapers by, XVI. 181.
 Butterby, near Durham, salt springs at, VIII. 266.
 Buttercup order of plants, V. 180.
 BUTTERFLY, VI. 35; IX. 206 *et seq.*—vast flights of, in Ceylon, VI. 395.
 — weed, V. 199.
 BUTTERIS, VI. 35.
 Butterley iron-works, Derbyshire, hot-blast at, XII. 548—steam-boiler, XX. 588.
 BUTTERMILK, VI. 35; VII. 622.
 BUTTER-TREE, VI. 35.
 Butterwort, V. 203.
 BUTTEVANT, town in Cork, VI. 35.
 Buttmann on philology, XVII. 533.
 BUTTON, VI. 35.
 — (Sir Thomas), exploratory voyages of, XVIII. 168.
 BUTTRESS, VI. 35—in pointed architecture, III. 489, 508—flying, VI. 35—in walls, VII. 325, 326—supporting roofs, XIX. 391.
 Butts, in archery, III. 425, 426.
 — leather, XIII. 305, 306.
 Butyric acid, IX. 758.
 BUTZOW, German city, VI. 35.
 BUXAR, town in Hindustan, VI. 35—battle of, XVII. 20.
 BUXTON, VI. 36—springs, VII. 755.
 — (JEDEDIAH), a celebrated mental calculator, VI. 36.
 — (Sir Thomas F.), on prison diet, VIII. 22—on the condition of English prisons, XVIII. 568—on the slave-trade, XX. 323.
 BUXTORF (John), senior, VI. 36—his Hebrew Bible, IV. 697—his Concordance, VII. 228—his Lexicon to the Talmud, XXI. 16.
 — (JOHN), junior, VI. 36—his controversy with Capellus, 206.
 BUYING, VI. 36—buying the refusal, *ib.*
 BUZOT, Spanish town, VI. 36.
 Buzzi (Mons.), on albinos, II. 448.
 BUZZARD, bird, VI. 36; XVI. 744.
 Byazid II. of Turkey, XXI. 379.
 Bylot, northern navigator, XVIII. 168.
 BYNG (George), Lord Viscount Torrington, VI. 36—his capture of the Spanish fleet, V. 455.
 — (the Hon. John), admiral, VI. 37—his alleged misconduct at Minorca, and execution, V. 463.
 BYNKERSHOEK (Cornelius Van), Dutch jurist, VI. 37.
 Byres for a cheese-dairy farm, VII. 624.
 Byrge (Juste), on logarithms, XIII. 553.
 BYROM (John), poet, VI. 37.
 BYRON (Lord George Gordon), VI. 37—on the advantages of believers in the gospel, XII. 5—his Manfred, VIII. 168

BYR—CAB

—criticisms on his works in the Edinburgh Review, XII. 717—the fascinating features of his Don Juan, XX. 871—his notice of the poet Rogers, XIX. 247—his aid to the Greeks, and death at Messolonghi, XI. 28—his opinion of Colman, VII. 132—Moore's life of, XV. 532—his poetry, XVIII. 92, 95, 126—his acquaintance with Shelley, XX. 101.
 Byron (Lord), his duel with Mr Chaworth, VIII. 232.
 — (Hon. John), admiral and circumnavigator, VI. 42; V. 470, 484—his visit to the Ladrone Islands, XVIII. 269.
 Byrrhii, tribe of insects, IX. 115.
 Byrrhus, genus of insects, IX. 115.
 Byrsa, VI. 180—its submission to the Romans, 303.
 Byssacanthus, genus of fossil fishes, XVII. 117.
 Byssolite, mineral, XV. 81.
 BRSSUS, VI. 42—filaments of Pinna, XV. 348.
 Bythites, genus of fishes, XII. 270.
 Bytown, in Canada, VI. 144.
 Bytownite, mineral, XV. 73.
 Byttneriaceæ, nat. order of plants, V. 184.
 Byturus, genus of insects, IX. 114.
 BYZANTINE HISTORIANS, VI. 42; XI. 548.
 — empire, coins of, XVI. 385.
 BYZANTIUM, VI. 43; VII. 302—philology at, XVII. 520.
 BZOVIVS (Abraham), VI. 43.

C

C, letter of the alphabet, VI. 44—in abbreviations, II. 18.
 CAABA, or KAABA, VI. 44; XIV. 378—black stone in, probably an acrolite, I. 459.
 CAB, a Hebrew measure, VI. 44.
 CABAL, VI. 44—name of a ministry, *ib.*; V. 425.
 CABALLARIA, VI. 44.
 CABALLINE, VI. 44.
 CABANIS (Pierre Jean George), VI. 44.
 CABBAGE, VI. 45—culture of, II. 321; XI. 737—as food, IX. 760—turnip-rooted, XI. 737.
 — order of plants, V. 182.
 Cabbage-rose, V. 191.
 CABBALA, VI. 45.
 CABBALISTS, VI. 45.
 CABENDA, town in Western Africa, VI. 45.
 Cabet (M.), his attempts to form a communistic settlement in America, VII. 208.
 Cabetes, V. 280.
 CABEZA DEL BUEY, Spanish town, VI. 46.
 CABIN, VI. 46.
 CABINET, VI. 46—as used in modern politics, *ib.*—of the United States, XXI. 429.
 Cabinet-making, XII. 805.
 CABIRI, deities of antiquity, VI. 46—mysteries of, XV. 753; celebrated in Samos, XIX. 593.
 CABIRIA, festivals in honour of the Cabiri, VI. 46.
 CABLE, VI. 46—sheet-anchor cable, *ib.*—stream-cable, *ib.*—chain, XX. 22—expediency of testing, XIV. 290—cables made of esparto, IX. 333.
 Cabling, in architecture, III. 508.
 Cabombaceæ, nat. order of plants, V. 181.
 CABOT (Sebastian), VI. 47; XVIII. 163—his discovery of Prince Edward's Island, 518; of Florida, IX. 666; Newfoundland and Labrador, VII. 158; VI. 158—his expedition to La Plata, XVII. 779.
 — (John), II. 699; VI. 47, 158; XVI. 172; XVIII. 163.
 CABRA, Spanish town, VI. 48.
 Cabral (Alvarez), II. 699; X. 393, 472—his discovery of Brazil, V. 279.
 CABRERA, islet in the Mediterranean, VI. 48.

CAB—CÆ

Cabrera (General), XX. 480, 481, 483.
 CABUL, in Afghanistan, VI. 48—climate of, II. 203—its trade, 206—retreat of the British from, V. 668—taken by General Pollock in 1842, II. 209.
 CACAO, or Cocoa, VI. 49. See *Cocoa-tree*, V. 185.
 Caccini, musician, XXI. 237.
 CACERES, in Spain, VI. 49; IX. 339.
 CACHALOT, the sperm-whale, VI. 49; XIV. 231—dentition of, XVI. 444—oil from, 493.
 CACHAO, VI. 49.
 Cachar, in Bengal, IV. 651.
 Cachias, in Brazil, XIV. 294.
 CACHOLONG, variety of calcedony, VI. 49; XV. 69.
 CACHUNDE, a medicine, VI. 49.
 CACOPHONY, VI. 49.
 Cactaceæ, nat. order of plants, V. 194—region of, 228; XVII. 628.
 CACTUS, genus of plants, VI. 49; V. 194—culture of, XI. 757.
 CACUS, VI. 49.
 CADARI, VI. 49.
 Cadastre, a survey of France, X. 276.
 Cade (Jack), his insurrection, VIII. 689.
 Cadell (W. A.), on fertilising land by warping, II. 364.
 CADENCE, in music, VI. 49; XV. 718.
 — in reading, VI. 49.
 Cader-Idris, mountain in Wales, XIV. 543.
 CADET, VI. 49—naval, XVI. 105.
 — and Brisson's experiments with a burning-glass, and discovery of achromatic fluid object-glasses, VI. 14, and n. 2.
 CADI, VI. 49; VIII. 445.
 CADILESCHER, VI. 49.
 CADIZ, VI. 49, 50—Drake's expedition to, VIII. 712—taken by the British in 1596, 713—their attempt upon it in 1702, V. 447—taken by the French, in 1823, X. 186—wine exported from, XX. 490—wines of, XXI. 884—effect of the vine disease at, *ib.*
 CADIZADELITES, Mahomedan sect, VI. 51.
 CADMEAN LETTERS, VI. 51.
 CADMIUM, VI. 51, 492; XV. 66.
 CADMUS, VI. 51—letters introduced into Greece by, II. 617; XI. 599—Thebes founded by, XXI. 176.
 — of Miletus, VI. 51.
 Cadolini (Aloys), his work on insects, IX. 17.
 Cadoudal (Georges), X. 129.
 CADRITES, VI. 51.
 CADUCEUS, VI. 51; XIV. 541.
 CADUS, VI. 51.
 CADUSII, VI. 51.
 Cæcidæ and Cæcilia, family and genus of reptiles, XIX. 40.
 Cælian hill, in Rome, XIX. 296, 356.
 CÆLIUS (Aurelianus), VI. 51.
 CAEN, in France, VI. 52—population, X. 277—building stone of, XX. 712.
 Cænurus, genus of entozoa, XXI. 978.
 CÆRE, Etrurian city, VI. 52.
 CAERLEON, in Monmouthshire, VI. 52.
 CAERMARTHEN, shire and town, VI. 52, 53; VIII. 754.
 CAERNARVON, VI. 54; VIII. 754—embankments in the county of, 644, 647.
 CAERPHILLY, in Glamorgan, VI. 55.
 CAERSWS, in Montgomeryshire, VI. 55.
 CAERWENT, town in Monmouthshire, VI. 55.
 CAERWYS, in Flintshire, VI. 55.
 Cæsalpinia, sub-order of plants, V. 190.
 CÆSALPINUS (Andreas), VI. 56; XIV. 461—his anatomical discoveries, II. 761.
 CÆSAR (C. Julius), VI. 57; XIX. 323 *et seq.*—his triumph over the Roman nobility, I. 321—his invasion of Britain, V. 376; XIX. 741—his reform of the calendar, VI. 77—Clarke's edition of his Commentaries, 757—his treatment of Cicero, 718, 719—his expedition to Egypt, VIII. 471—his pursuit of Cato, 339—his accounts of the Druids, 184, 185, 188; XI. 599—his defeat of Juba at Thapsus, XIII. 13—sculpture encou-

CÆ—CAL

raged by, XIX. 858—his account of the Caledonian tribes, 742—his account of the vessels used in the invasion of Britain, XX. 118; and of those of the Gaulish Veneti, *ib.*—in Spain, 458—Helvetii defeated by, 883—death of, XIX. 328.
 Cæsar, title of, VI. 57.
 — (Sir Julius), VI. 58, 764.
 — (Julius), surgeon, XIV. 2.
 CÆSAREA, two towns in Palestine, VI. 58.
 CÆSAREAN OPERATION, VI. 58; XX. 817.
 Cæsius, genus of fishes, XII. 288.
 CÆSONES, VI. 58.
 CÆSTUS, VI. 58, 390.
 CÆSURA, VI. 58.
 CÆTERIS PARIBUS, VI. 58.
 CAFFA, VI. 58. See Kaffa.
 CAFFEINE, VI. 58, 519; V. 196; VII. 54.
 CAFFILA, VI. 58.
 CAFFRARIA, VI. 58. See Kafraria.
 CAFFRES, or Kaffres, VI. 58; II. 222; IX. 351; X. 712; XIII. 32 *et seq.*—language of, 219, 225, 226.
 CAFTAN, VI. 58.
 CAGANUS, or Cacanús, VI. 58.
 CAGE, VI. 58—in coal mining, VII. 126.
 CAGLI, Italian town, VI. 58.
 CAGLIARI, in Sardinia, VI. 58; XIX. 640.
 — (PAOLO), painter, VI. 59. See Paolo Veronese.
 CAGLIOSTRO (Alessandro), count, modern impostor, VI. 59.
 Cagniard de la Tour, his Sirène, I. 892.
 CAHER, or Cahir, in Tipperary, VI. 59; XXI. 288.
 Cahokia, in Illinois, XII. 363.
 CAHORS, French town, VI. 60; XIII. 696.
 CAIAPHAS, Jewish high-priest, VI. 60.
 CAILLE (Nicolas Louis de la), VI. 60; XIII. 141—his astronomical labours, III. 805—his measurement of an arc of meridian, I. 774; IX. 550—on the diminution of the obliquity of the ecliptic, IV. 13—his catalogue of stars, 80, 95—his micrometer, XIV. 758.
 Cailleau on anonymous books, IV. 712—his Bibliographical Dictionary, 714.
 Caillie, African traveller, II. 210.
 CAIMACAN, VI. 60.
 CAIN, son of Adam and Eve, VI. 60; II. 24; III. 267.
 Ca'ing whale, XIV. 227.
 CAINITES, sect of heretics, VI. 60.
 Caird (James), on chalking land, II. 303—his account of Lawes' experiments, 309—his estimate of the average yield of wheat in England, 310—on the sainfoin crops of Berkshire, 329—estimate of the extent of land in England under crop and fallow, VIII. 723—his farming at Baldoon, XXI. 864.
 Cairina, genus of birds, XVI. 817.
 CAIRN, VI. 61; IV. 473.
 CAIRNGORM, mountain, VI. 61; II. 32—beryls of, IV. 683.
 — variety of rock-crystal, VI. 61; II. 32; XV. 69.
 CAIRO, VI. 61; II. 224; VIII. 477, 498, 499—captured by the British in 1801, V. 584—bombarded by Khursheed, VIII. 491.
 Caisse d'escompte, X. 39.
 CAISSON, VI. 62—caissons used in laying the foundations of bridges, XX. 722.
 CAISTOR, in Lincolnshire, VI. 62.
 CAITHNESS, VI. 62—fisheries, IX. 635, 639—fossils of, XVII. 124—geology, XIX. 793—scenery, 794—agricultural statistics, 796, 797, 798—population, 799.
 CAIUS, or Kaye (Dr John), founder of Caius College, Cambridge, VI. 63; XIV. 460; XXI. 465—his treatise on British dogs, XI. 763.
 — Institutes of, VI. 741, 744, 745.
 CAJAZZO, Neapolitan city, VI. 63.
 CAJEPUT oil, VI. 63; V. 192.
 CAJETAN (Cardinal), VI. 63; XIII. 725.
 Caju-apple oil, XVI. 496.
 CAKE, VI. 63—for cattle, II. 345, 419.
 Cake-crusher, II. 283.
 Caking coal, VII. 118.
 CALABAR, Old, African river, VI. 63.

CAL—CAL

CALABAR, New, a branch of the Quorra, VI. 63.
 — bean, V. 190.
 CALABASH, VI. 63.
 — tree order of plants, V. 200.
 Calabozzo, in South America, temperature at, II. 673.
 CALABRIA, VI. 63; XX. 237, 255—British expedition to, in 1806, V. 602—Dolomieu on an earthquake in, VIII. 95—climate of, XII. 639; XX. 247—earthquakes in, XVII. 616.
 CALABRITTO, Italian city, VI. 64.
 CALAHORRA, Spanish town, VI. 64.
 CALAIS, VI. 64—tournament at, 618—taken by the English, VIII. 683—recovered by the French, 710—staple for wool at, XXI. 909.
 — (PAS DE), VI. 65; XVII. 331.
 Calaité, mineral, XV. 74.
 CALAMANCO, VI. 65.
 Calamaria, genus of serpents, XIX. 55.
 Calamaries, mollusks, XV. 399, 400—fossil, XVII. 114.
 CALAMIANES, islands, VI. 65.
 CALAMINE, VI. 65; XV. 100, 246—mines of, in Derbyshire, VII. 754—in Belgium, IV. 624—pyro-electricity of, VIII. 561—used in making brass, V. 277—electric, XV. 100—accidental discovery of, in Cornwall, XXI. 321.
 CALAMIS, Greek sculptor, VI. 65.
 CALAMISTRUM, VI. 65.
 Calamite, mineral, XV. 81.
 CALAMITES, fossils, VI. 65; V. 235, 236.
 Calamity, erroneously regarded as a proof of divine displeasure, I. 473, 479.
 CALAMUS, VI. 65.
 CALAMY (Edmund), VI. 65—made chaplain to Charles II., V. 420.
 — (EDMUND), VI. 65.
 Calandra, genus of insects, IX. 140.
 Calandrini, the first improver of the Newtonian theory of the moon, I. 779.
 CALANUS, VI. 66.
 Calaos, birds, XVI. 773.
 Calappa, genus of crustacea, VII. 541.
 CALAS (Jean), VI. 66—his family assisted by Voltaire, XXI. 661.
 CALASH, VI. 66.
 CALASIO (Mario de), VI. 66—his Concordance of the Bible, VII. 228.
 CALASIRIS, VI. 66.
 CALATAFIMI, city in Sicily, VI. 66.
 CALATAGIRONE, town in Sicily, VI. 66.
 CALATATUD, Spanish town, VI. 66.
 CALATHUS, VI. 66—genus of insects, IX. 91.
 CALATRAVA, VI. 66—knights of, *ib.*; II. 451.
 CALAURIA, island, VI. 67—amphictyony of, II. 729.
 Calcagni (Dr Francesco), on the mortality at Palermo, XV. 625.
 CALCAR (John de), painter, VI. 67.
 CALCAREOUS SPAR, VI. 67; XV. 91—colours in, XVI. 540—optical properties of, 659; I. 913—dichroism, XVI. 666—its crystallisation, VII. 552 *et seq.*; VI. 445—discovery of polarization by, I. 902.
 — ball, a disease in cattle, XXI. 568.
 — rocks, origin of, XVII. 619—their use as building materials, *ib.*; XX. 712.
 — soils, V. 98—plants of, 221.
 CALCEARIUM, VI. 67.
 CALCEDONY, VI. 67; XV. 69; II. 231.
 Calceola, fossil mollusk, XVII. 104.
 CALCEOLARIA, genus of plants, VI. 68—region of, V. 228; XVII. 629.
 CALCEUS, Roman shoe or boot, VI. 68; XX. 208.
 CALCHAS, VI. 68.
 Calchedon, VI. 401.
 CALCINATION, VI. 68—of iron ores, XII. 545, 574—of brass, V. 277.
 CALCIUM, VI. 68, 487—oxides of, in the earth's crust, XVII. 619.
 Calcott, painter, XXI. 388. See Callcott, (Sir Augustus).
 CALC-SINTER, VI. 68.
 Calc-spar, XV. 91. See Calcareous Spar.
 CALC-TUFF, VI. 68.

CAL—CAL

Calculating machines, I. 880, 881.
 Calculation, Greek mode of, II. 5; III. 577—Roman, II. 6—of interest, XII. 432—of new and full moon, and eclipses, IV. 120.
 CALCULI, VI. 68.
 — (urinary), VI. 68; XVII. 691—cure of calculous diseases, XX. 830—in the domestic animals, XXI. 570. See Lithotomy, Lithotripsy.
 CALCULUS, VI. 68.
 — in mathematics, VI. 68—James Bernoulli on the, IV. 672, see Fluxions, and Geometry (New)—differential and integral, VI. 68—of partial differences, *ib.*—of variations, *ib.*; IX. 675—of exponentials, VI. 68—of functions, *ib.*—of finite differences, 69—of derivations, *ib.*—of probabilities, *ib.*—of sines, *ib.*—of operations, I. 807—Minervæ, VI. 69.
 CALCUTTA, VI. 69; XXI. 399—cotton-mill at, VII. 439—population of, IV. 651—Black Hole of, XI. 484.
 CALDANI (L. Marco Antonio), VI. 71.
 CALDARIUM, VI. 71.
 CALDER, Yorkshire river, VI. 71; XXI. 957, 680.
 Calderari, Italian political society, XII. 655.
 CALDERINUS (Domitius), critic, VI. 71.
 CALDERON DE LA BARCA (Don Pedro), VI. 71; VIII. 146; XVIII. 114.
 Calder-pipes for blast-heating, XII. 548.
 CALDERWOOD (David), VI. 72.
 — (Col.), on a base for the trigonometrical survey, XXI. 330.
 Caldew, river, VII. 576.
 CALDRON, or Cauldron, VI. 73.
 CALDWALL (Richard), VI. 73.
 CALEDONIA, VI. 73.
 — (NEW), island, VI. 74; IV. 266.
 CALEDONIAN CANAL, VI. 74; XVI. 55; XIX. 807—Telford engineer to, XXI. 145.
 Caledonians, VI. 73, 74; XIX. 741, 742—Agricola's wars with the, V. 379; XIX. 741—Severus' campaign against, 341.
 Caledonii, VI. 74.
 Caledonite, mineral, XV. 105.
 CALELLA, Spanish town, VI. 74.
 CALENBERG, in Hanover, VI. 74.
 CALENDAR, VI. 75—Gregorian, 82, 85—reformation of the, 82—ecclesiastical, 79—Mexican, II. 684—Hindu, VI. 353—Druidical, VIII. 186—Egyptian, 449, 450—French revolutionary, X. 84—gardener's, XI. 758—why not reformed in Russia, XIX. 528—errors from confounding civil and ecclesiastical years, XVIII. 320, *n.* See Chronology, Day, Month, Year.
 CALENDER, VI. 89; IV. 767—calendering of cotton cloth, *ib.*
 CALENDERS, Mahomedan friars, VI. 93; IX. 472.
 Calends, or Kalends, XIII. 40; VI. 76.
 CALENTURE, VI. 93.
 CALENZIO (Eliseo), VI. 93.
 CALEPINO (Ambrogio), VI. 93.
 CALF, VI. 93—treatment of calves, II. 344; in Essex, IX. 337—skins for leather, XIII. 305—subject to costiveness, XXI. 565.
 — (GOLDEN), VI. 93.
 CALI, town in New Granada, VI. 93.
 CALIAN, town in Hindustan, VI. 93.
 Caliban, character of, XX. 88 and *n.* 2.
 CALIBER, or calibre, VI. 93—compasses, *ib.*—rule, 94.
 CALICO, VI. 94—manufacture of, in Bengal, IV. 650—once made of linen warp and cotton weft, VII. 441—cotton calicoes, 449—as used in hat-making, XI. 242—manufacture of, in India, 458, 459—in Derbyshire, VII. 755.
 CALICO-PRINTING, VI. 94; VIII. 314; XVIII. 520—first introduced at Pollock-shaws, X. 648.
 CALICUT, in Hindustan, VI. 94.
 CALIDASA, Indian poet, VI. 94.
 CALIFORNIA, VI. 94.
 — (UPPER), VI. 95; XXI. 419—Gold region of, II. 706; VI. 97; XV. 232—

CAL—CAL

supplies of gold from, XVIII. 463—rate of wages in, 466, 467—persons engaged in digging gold, and their average gains, XV. 421—climate of, II. 672—probable descent of the natives of, 695—cinnabar found in, XV. 238—tribes of Indians in, IX. 347—ceded to the United States, XIV. 714; XXI. 442—mercury found in, XVII. 622—gigantic trees of, 626—pine-trees of, 757, 760—wines of, XXI. 888—debt of, 428—slavery prohibited in, *ib.*
 CALIFORNIA (Lower), VI. 94; XIV. 728, 718.
 — GULF OF, VI. 100, 94.
 CALIGA, VI. 100.
 CALIGATI, VI. 101.
 CALIGULA, Roman emperor, VI. 101—reign of, XIX. 335—his landing in Britain, V. 377—his persecution of the Jews, XII. 772—his jealousy of Seneca, XX. 45.
 Caligus curtus, VII. 543.
 CALIPH, VI. 101—Spain under the caliphs, XX. 466.
 CALIPHATE, VI. 101; XV. 412.
 CALIPPIC PERIOD, VI. 101, 79.
 CALIPPUS, astronomer of Cyzicus, VI. 101, 79—his astronomy, III. 789—his correction of the Metonic cycle, VI. 79.
 CALISTHENICS, VI. 101.
 CALITRI, Italian town, VI. 101.
 CALIXTINES, VI. 101.
 CALIXTUS, three popes so named, VI. 101.
 — (GEORGIUS), VI. 101.
 Calking, in shoeing horses, XXI. 560.
 CALLAN, town in Kilkenny, VI. 101; XIII. 85.
 CALLANDER, in Perthshire, VI. 102; XVII. 459.
 Callanish, druidical temple, XIII. 351.
 Callan's (Rev. Mr) powerful electro-magnet, XXI. 641.
 CALLAO, in Peru, VI. 102; XVII. 474.
 — or Campello, island, VI. 102.
 Callavayas, Peruvian Indians, IV. 829.
 CALLCOTT (John Wall), VI. 102.
 — (Sir AUGUSTUS), painter, VI. 102.
 Callet's work on logarithms, XIII. 555.
 Callianiridae, zoophytes, XXI. 1001.
 Callicera, genus of insects, IX. 238.
 Callichroma, genus of insects, IX. 144.
 Callichthys, genus of fishes, XII. 262, 259, 260.
 CALLICRATES, sculptor, VI. 102.
 Callidium, genus of insects, IX. 145.
 CALLIGRAPHUS, VI. 102.
 CALLIMACHUS, Greek poet, VI. 102—his quarrel with Apollonius the Rhodian, III. 303.
 — architect, VI. 102.
 Callimorpha, genus of insects, IX. 214.
 Calling, in theology, XXI. 218.
 CALLINGAPATAM, in Hindustan, VI. 102.
 CALLINGER, fortress in Hindustan, VI. 102; V. 764.
 CALLINGTON, town in Cornwall, VI. 103.
 CALLINO, town in Italy, VI. 103.
 CALLINUS, Greek poet, VI. 103.
 Calliodon, genus of fishes, XII. 223.
 Callionymus, genus of fishes, XII. 306, 307.
 Calliopæa, genus of mollusks, XV. 370.
 CALLIOPE, VI. 103; XV. 699.
 — planet, IV. 91.
 CALLIPEDIA, VI. 103.
 Callipe (M.), on iron bridges, XII. 577.
 Callipers, VI. 93—used in turning, XXI. 391.
 CALLIPHON, Epicurean philosopher, VI. 103.
 Callipteryx, genus of fossil fishes, XII. 344.
 Callirhipis, genus of insects, IX. 106.
 CALLIRRHOE, fountain near Athens, VI. 103; IV. 170.
 — in Mesopotamia, VIII. 389.
 CALLISTEIA, Lesbian festival, VI. 103.
 CALLISTHENES, VI. 103; III. 534.
 CALLISTO, VI. 103.
 CALLISTRATUS, Athenian orator, VI. 103.
 — Athenian poet, VI. 103.
 Callithrix, in zoology, XIV. 140.
 Callitrichaceæ, nat. order of plants, V. 206.

CAL—CAL

Callomyia, genus of insects, IX. 242.
 CALLON, Greek sculptor, VI. 103; XIX. 854.
 — (M.), on turbine wheels, XII. 171.
 Callorhynchus, genus of fishes, XII. 319.
 CALLOSA DE ENSARRIA, Spanish town, VI. 103.
 — DE SEGURA, VI. 103.
 CALLOT (Jacques), engraver, VI. 103.
 Callow (Mr), on growing mushrooms, XI. 736.
 CALLY (Pierre), VI. 104.
 Callyodon, genus of fishes, XII. 266, 268.
 CALM LATITUDES, VI. 104—advantages of steam-vessels in a calm, XX. 21.
 CALMAR, or Kalmar, in Sweden, VI. 104—union of, VII. 739.
 CALMET (Augustine), VI. 104.
 Calmuc skull, III. 29.
 CALNE, town and river in Wiltshire, VI. 104; XXI. 879.
 Calobata, genus of insects, IX. 253.
 CALOGERI, or Caloyers, monks, VI. 104.
 CALOMEL, VI. 105, 498; XV. 107.
 Calonne (Mons. de), X. 40 *et seq.*
 Calophysus, genus of fishes, XII. 262.
 Caloptrophorus, genus of birds, XVI. 805.
 Calopus, genus of insects, IX. 133.
 Calore, river, XX. 238.
 CALORIC, VI. 105; XI. 260. See Chemistry.
 CALORIMETER, VI. 105; XI. 273; I. 820, 932; XXI. 220.
 CALORIMOTOR, VI. 105—Dr Hare's, XXI. 616.
 Calosoma, genus of insects, IX. 98.
 Calostomena, genus of fossil fishes, XII. 338.
 Calotes, genus of reptiles, XIX. 32.
 CALOTTE, VI. 105, 205.
 CALOTYPE, VI. 105; I. 923; XVII. 545—analogy between it and daguerrotype, I. 923.
 CALOVIUS (Abraham), VI. 105.
 CALPE, VI. 105.
 CALPURNIUS (Titus), VI. 105.
 — (Flamma), Roman army rescued by, VI. 288.
 CALTANISSETTA, in Sicily, VI. 105; XX. 255.
 CALTROP, VI. 105.
 CALTURA, in Ceylon, VI. 105.
 CALUMBA, tonic root, VI. 105; V. 181.
 CALUMET, VI. 105.
 CALUMNY, VI. 105—oath of, *ib.*
 CALVADOS, in France, VI. 105—lace-making in, XIII. 142.
 CALVART (Denis), VI. 106.
 CALVARY, VI. 106; XII. 737—in heraldry, VI. 106.
 Calvely (Sir Hugh), XIII. 111.
 Calver (E. K.), on tidal rivers, XVI. 77.
 Calvert (Prof. F. Crace), part of the article Dyeing in this work written by, VIII. 272—his method of purifying coke, X. 320.
 — (Mr), his theory as to the site of Troy, XXI. 357.
 — (GEORGE), Lord Baltimore, VI. 106; XVI. 172.
 CALVI, in Corsica, VI. 106—siege of, XVI. 133.
 CALVIN (John), VI. 106; XXI. 183—his principal followers, *ib.*—his disregard of the authority of Aristotle, I. 16—on usury, *ib.*, 233—his system of church polity, XVIII. 487—his liturgy, XIII. 516—on original sin, XXI. 205—on theology, 185 *et seq.*—on interest on money, XII. 427, *n.* 2—his letter to Socinus, XX. 368—his intercourse with John Knox, XIII. 125—his controversies with Servetus, XX. 60.
 CALVINISM, VI. 111—in Holland, XI. 573, 588—countries in which it prevails, IX. 394—predestination, XVIII. 478—Whitby against, XXI. 852—contrasted with Lutheranism, XIII. 740, 741—in Prussia, XVIII. 658.
 Calvinistic Methodists, XIV. 693—Baptists, IV. 427.
 CALVISIUS (Sethus), VI. 111.
 CALVUS (Calus Licinius), VI. 111.

CAL—CAM

CALX, VI. 112.
 Calycanthaceæ, nat. order of plants, V. 191.
 Calyceraceæ, nat. order of plants, V. 196.
 Calycifloræ, sub-class of plants, V. 179, 189.
 Calyciphoridae, polypes, XXI. 1006.
 CALYCISTÆ, VI. 112.
 CALYDON, ancient town of Ætolia, VI. 112.
 Calymene, trilobites, XVII. 101, 102.
 Calymna, coins of, XVI. 376.
 Calyptridae, family of mollusks, XV. 381—fossil, XVII. 110.
 CALYPSO, VI. 112.
 Calypsolite, mineral, XV. 87.
 Calyptrorhynchus, genus of birds, XVI. 783.
 Calyptra, in mosses, V. 145.
 Calyptræa, genus of mollusks, XV. 381.
 CALYX, VI. 112; V. 117, 122.
 CAM, in mechanics, VI. 112; XIV. 396—striking cams, in clock-making, VII. 22, 37.
 — river in Cambridgeshire, VI. 114.
 CAMAIEU, or Cameo, VI. 112.
 CAMALDULIANS, VI. 112.
 CAMALODUNUM, VI. 112.
 CAMANDOO, town in Hindustan, VI. 112.
 Camapuam, river, XIX. 176.
 CAMARGUE, delta of the Rhone, VI. 112; V. 241.
 CAMARINA, in Sicily, VI. 112—coins of, XVI. 365.
 Camaroceras, fossil mollusks, XVII. 112.
 Camarota, genus of insects, IX. 254.
 CAMASSEI (Andrea), painter, VI. 112.
 Cambacères, X. 94, 116, 132 *et seq.*
 CAMBAY, town in Hindustan, VI. 112.
 — gulf of, VI. 113.
 CAMBAYES, cotton cloths, VI. 113.
 CAMBER, VI. 113.
 CAMBERED DECK, VI. 113.
 CAMBERT (Robert), VI. 113.
 CAMBERWELL, in Surrey, VI. 113.
 CAMBIO, VI. 113.
 CAMBIST, banker, VI. 113.
 Cambium layer, in plants, V. 82, 101; XXI. 267.
 Camblet, VI. 121.
 CAMBODIA, or Camboja, Asiatic kingdom, VI. 113; III. 735; VII. 48, 49; XX. 231.
 — river, XIV. 474. See Mekong.
 CAMBORNE, town in Cornwall, VI. 113.
 CAMBRAY, town in France, VI. 113—cambric named from, *ib.*—league of, XIII. 18.
 CAMBRIA, ancient name of Wales, VI. 113.
 Cambrian period, in geology, XV. 196, 185—did life first begin in this period? 196, *n.*—mollusca of, 403—fossils, XVII. 92 *et seq.*—rocks in Scotland, XIX. 793.
 CAMBRIC, VI. 113—manufacture of cotton cambric, VII. 449—Irish cambrics sold for French, VI. 92.
 CAMBRIDGE, VI. 113—study of mathematics at, I. 807—observatory of, III. 817—Bentley's administration of Trinity College, IV. 658—university, VIII. 745; XXI. 459—colleges and halls, 465—examinations at the, IX. 424, 425—libraries, XIII. 397—early printing at, XVIII. 538—societies in, XX. 368.
 — town in Massachusetts, VI. 114; XIV. 341; XXI. 749—Harvard University at, XIV. 340—Mount Auburn Cemetery, V. 62.
 — (H.R.H. Duke of), Staff College established by, XXI. 699.
 CAMBRIDGESHIRE, VI. 114—population and value of property, VIII. 754.
 Cambridge's roller, II. 273.
 Cambro-silurian period, in geology, XV. 196.
 Cambuskenneth, VI. 749.
 CAMBYSES, VI. 115; VII. 611.
 — son of Cyrus, VI. 115; XVII. 434—his conquest of Egypt, VIII. 465—his treatment of Croesus, XX. 388, *n.* 4.
 CAMDEN (William), VI. 115—on the origin of the word *bigot*, IV. 721—on the Foss Dyke, XVI. 54.
 — (Marquis of), relinquishment of a pension by, V. 623.

CAM—CAM

CAMDEN, city in New Jersey, VI. 116.
 — in South Carolina, VI. 116.
 — in Australia, IV. 278, 282.
 CAMEL, VI. 116; XIV. 204; XVII. 632—its stomach, III. 108; water-cells in, 109—teeth, XVI. 466—dung used as fuel, X. 318—in Egypt, VIII. 431—Arabian, III. 346—Asiatic, 739—Bactrian, XI. 454—age attained by, II. 234—in Palestine, XVII. 191—fossil, 638.
 — machine for raising ships, VI. 116; XII. 83; XVI. 55, *n.* 3.
 — river, VII. 406.
 CAMELEON, or Chameleon, species of reptile, VI. 117; XIX. 37—its vertebrae, III. 86—common in Africa, II. 218; XVII. 634—erectile arrangement in its tongue, III. 100.
 CAMELFORD, town in Cornwall, VI. 117.
 CAMELLIA, genus of plants, VI. 117; V. 185—tea-plant of the same family, XXI. 81—culture of, XI. 757.
 CAMELOPARD, VI. 117; II. 217. See Giraffe.
 Camelopardalis, genus of mammalia, XIV. 209—fossil, XVII. 173.
 Camelus, genus of mammalia, XIV. 204.
 CAMENÆ, VI. 117. See Carmentalia.
 CAMEO, or Camaieu, VI. 117, 112.
 CAMERA ÆOLIA, VI. 117.
 — LUCIDA, VI. 117; XVII. 445.
 — OBSCURA, VI. 119; XVI. 526, 696; XXI. 117—invention of, I. 624.
 — for photographic purposes, XVII. 554; XX. 690.
 CAMERALISTICS, the science of finance, VI. 119.
 CAMERARIUS (Joachim), senior, VI. 119.
 — (JOACHIM), junior, VI. 119.
 CAMERINO, in Italy, VI. 119—delegation of, XVII. 243.
 CAMERLINGO, VI. 119.
 CAMERON (John), VI. 119.
 — (RICHARD), founder of the Cameronians, VI. 120; V. 432; XVIII. 501.
 CAMERONIANS, VI. 120; XVIII. 501. See Reformed Presbyterian Church.
 CAMEROONS, African river, VI. 120.
 CAMILLI and Camillæ, VI. 120.
 CAMILLUS (Marcus Furius), VI. 120; XIX. 302.
 CAMIS, or Kamis, VI. 121.
 CAMISADE, VI. 121.
 CAMISARDS, VI. 121.
 CAMLET, VI. 121—manufactory of, XVI. 333.
 CAMOENS (Luis de), VI. 121; XVIII. 399—cave of, XIII. 756—poetry of, XVIII. 114.
 CAMOMILE, VI. 122. See Chamomile.
 CAMP, VI. 122.
 CAMPAGNA, Neapolitan city, VI. 122.
 — DI ROMA, VI. 122.
 Campagnola (Giulio), engraver, VIII. 800.
 CAMPAIGN, VI. 123—plan of, XXI. 698.
 CAMPAN, town in France, VI. 123.
 — (Madame), VI. 123—quotation from, on mesmerism, XX. 419.
 CAMPANA, Spanish town, VI. 123.
 CAMPANELLA (Thomas), VI. 123; I. 26 and *n.* 3.
 Campanero, bird, XVI. 750.
 CAMPANI-ALIMENTIS (Matteo), VI. 123.
 CAMPANIA, part of ancient Italy, VI. 123—wines of, XXI. 882.
 Campanian system of agriculture, XX. 247.
 CAMPANIFORM, bell-shaped corolla, VI. 123.
 CAMPANILE, VI. 123.
 CAMPANINI, marble, VI. 124.
 Campanulaceæ, nat. order of plants, V. 197.
 Campanulariade, polypes, XXI. 1006.
 Campanus of Navarre, X. 504.
 CAMPBELL (Archibald), earl and marquis of Argyll, VI. 124—one of the leaders of the Covenanters, V. 395—his wars with Montrose, and defeat at Innerlochy, 406.
 — (ARCHIBALD), earl of Argyll, VI. 124—his opposition to the Test Act, V. 432—his rebellion and execution, 435.
 — (ARCHIBALD), first Duke of Argyll, VI. 124.

CAM—CAM

CAMPBELL (Archibald), third Duke of Argyll, VI. 125.
 — (Sir Archibald), his expedition against the Burmese, V. 646, 783, 784.
 — (Captain), of Finab, VII. 659.
 — (Captain C. D.) his expedition to the Euphrates, IX. 376.
 — Castle, VI. 751.
 — (Sir Colin), his operations in India against the rebels, XVI. 308, 313, 314, 315—in the Crimea, XIX. 504.
 — (GEORGE, D.D.), VI. 125—sense in which he employs the words *physics* and *physiology*, I. 9—his merits as a writer, 220, 222—on the power of truth, XIII. 368—on rhetoric, XIX. 133 *et seq.*
 — (James), his report on the United States' post-office, XVIII. 419.
 — (JOHN, LL.D.), VI. 125.
 — (JOHN), second Duke of Argyll, VI. 124—his conduct in reference to the Union, V. 452—commander-in-chief in Scotland, 453.
 — (Lord), on the life of Lord Eldon, XIX. 813 *et seq.*
 — (Lord), on the character of Lord Guildford, VI. 411; of Sir M. Hale, XI. 186.
 — (Major), executed for killing in a duel, VIII. 232.
 — (Mr), on landholders in India, XI. 519.
 — (THOMAS), poet, VI. 125—on Chaucer's Canterbury Tales, 434—on the Hebrew poets, XVIII. 97, 98—on the characters of the Iliad, 100—on Goldsmith, 124—on Shakspeare, XX. 70, *n.* 1, 77, 80, 84—on Sternhold's version of the Psalms, 693—his residence at Sydenham, 891.
 CAMPBELTOWN, VI. 128.
 CAMPDEN-CHIPPING, VI. 128.
 CAMPEACHY, town in Mexico, VI. 128; XI. 609; XIV. 726—taken by the Buccaneers, V. 712.
 Campeggio (Cardinal), VIII. 699; XIII. 730.
 CAMPER (Peter), VI. 128; XX. 818—his anatomical labours, II. 766—his facial angle, III. 30, 79—his works, VI. 129.
 CAMPERDOWN, VI. 129—battle of, V. 561; X. 107; VIII. 253, 254.
 Camphine, XIII. 172.
 CAMPHOR, VI. 129, 517; V. 204—effects of electricity on its odour, VIII. 599—its narcotic qualities, XIV. 439—specific gravity of, XII. 89—optical properties of, XVI. 680.
 — of Sumatra and Borneo, V. 185—tree in Sumatra, XX. 804.
 CAMPIAN (Edmund), VI. 130.
 CAMPIDOCTORES, VI. 130.
 CAMPILLO DE ARENAS, Spanish village, VI. 130.
 CAMPITÆ, VI. 130.
 CAMPLI, town in Italy, VI. 130.
 CAMPO DE CRIPTANA, in Spain, VI. 130.
 CAMPO FORMIO, Italian town, VI. 130—treaty of, V. 561; X. 107; XV. 791.
 CAMPOBASSO, city in Italy, VI. 130.
 CAMPOMANES (Pedro Rodriguez, Conde de), Spanish statesman, VI. 130.
 Campsia, genus of insects, IX. 132.
 CAMPSIE, in Stirlingshire, VI. 130—alum-works at, II. 637, 640.
 — hills, XIX. 791.
 Camptocerus, genus of insects, IX. 142.
 Camptorhynchus, genus of insects, IX. 140.
 CAMPUS, VI. 130—Mail—Sceleratus, *ib.*
 — Martius, in Rome, VI. 130; XIX. 360.
 Campylomyza, genus of insects, IX. 226.
 CAMROOP, in Assam, VI. 130; III. 762.
 CAMUS (Charles Stephen Louis), VI. 131—his aid in measuring a degree of the meridian, IX. 549.
 — (JEAN PIERRE), bishop, VI. 132.
 — (M.), on the termination of the nerves of the hand, II. 816.
 — (Mons.), on bibliographical dictionaries, IV. 714—on the classification of books, 715, 716.

CAM—CAN

CAMWOOD, dye-stuff, VI. 132; VIII. 287.
 CANA, of Galilee, VI. 132—miracle at, I. 515.
 CANAAN, son of Ham, VI. 132—his descendants, VIII. 46—language of the Canaanites, XIII. 209.
 — (LAND OF), VI. 132; XVII. 181—taken possession of by the Israelites, XII. 766—its ancient divisions, XVII. 192. See Palestine.
 CANADA, VI. 132—Mr Pitt's bill of 1791 for the government of, V. 537—invaded by the Americans in 1812, 616—discontents in 1825, 641—rebellion of 1837, 665—bill for suspending the constitution of, 666—Earl of Durham's administration in, ib.—corn-law measure of 1842, VII. 384—system of education in, XV. 821—Life Assurance Company of, XII. 413—presbyterianism in, XVIII. 492—railway statistics, 787—rice of, XIX. 157—maple-sugar, XX. 798—elm, XXI. 274—red pine of, 275—yellow pine, ib.—weights and measures, 810—map of, VI. Plate.
 CANAL, VI. 160; XVI. 53—peculiar effect of wave transmission in canals, I. 889—Mr Scott Russell's experiments on the Forth and Clyde Canal, ib.—aqueduct bridges of, III. 338—motion of water in, XII. 136; XIX. 182—Green's canal lifts, XII. 83—for irrigation, 612 *et seq.*, 637; XIII. 648—manner in which a boat is tracked along a, XX. 5—of Aragon, III. 393—in Belgium, IV. 611—at Birmingham, 732—Bacon, V. 312—Brindley's canals, 367—Bridge-water, VI. 529; XIII. 179; XVI. 54—Cambridgeshire, VI. 115—Canada, 154—of Castille, XVII. 178—Cheshire, VI. 529—China, 591, 592—Derbyshire, VII. 754—Devonshire, 763—Dublin County, VIII. 215—Union Canal, 411—in Egypt, 430; II. 472—England, 722—France, X. 243—Forth and Clyde, VIII. 236; I. 889; XIII. 176—Great Ganges Canal, X. 400—Glasgow and Ardrossan, IV. 333—in Gloucestershire, X. 680—Hampshire, XI. 203—Holland, 581; Great North Holland, ib.; XVI. 55—Hungary, XII. 10—Kildare, XIII. 83—Kentucky, 70—of Kiel, 80—Lancashire, 179—Leicestershire, 320—Lancashire, 176—Leitrim, 329—Lincolnshire, 492—connected with London, 679—connected with Manchester, XIV. 258—Maryland, 330—Massachusetts, 340—Mesopotamia, IV. 364—Mexico, XIV. 715—Middlesex, 808—St Laurence canals, XV. 522—New Jersey, XVI. 176—Newry, 179—New York, 220, 227—Nicaragua, proposed ship canal through, 245—Norfolk, 289—Northamptonshire, 297—Nottinghamshire, 340—Nova Scotia, 343—Ohio, 490—Glasgow, Paisley, and Johnstone, XVII. 89—Pennsylvania, 397—in Petersburg, 488—Prussia, XVIII. 662—Punjab, 688—Queen's County, 729—Russia, XIX. 536—Scotland, 807, 808—Spain, XX. 491—Sweden, 864—Stirlingshire, 704—across the Isthmus of Suez, 789—of the United States, XXI. 427. See the different Countries, Counties, &c.
 — in anatomy, VI. 160.
 — DE PRINCIPE, VI. 160.
 CANALE, or CANALETTO (Antonio), VI. 160; XVII. 72.
 CANANDAIGUA, in Ontario, VI. 160.
 CANANORE, in Hindustan, VI. 160.
 CANARA, in Hindustan, VI. 160—North, 161—South, 162.
 Canard (M.), on political economy, XVIII. 226.
 CANARY ISLANDS, VI. 162—language of, XIII. 219—height of mountains in, XVII. 644—weights and measures, XXI. 810—wines of, 887.
 — seed, II. 337.
 — Grand, island, VI. 166.
 CANARY-BIRD, VI. 167; XVI. 761.
 CANCALE, town in France, VI. 167.
 CANCAO, or Cancar, in Cambodia, VI. 167.

CAN—CAN

Cancellaria, fossil mollusks, XVII. 110.
 CANCELLI, VI. 167.
 CANCER, disease, VI. 167; XVIII. 690—cancer-cells, XVII. 650—ancient treatment of, XX. 815.
 — in Astronomy, VI. 167—tropics of, 168; IV. 11; X. 481.
 CANCERIZANTE, musical term, VI. 168.
 Cancrinite, mineral, XV. 73.
 Cancroma, genus of birds, XVI. 798.
 CANDACE, queen of the Ethiopians, VI. 168.
 CANDAHAR, or Kandahar, VI. 168; II. 206 *et seq.*—occupied by the British in 1839, 208.
 CANDAULES, king of Lydia, VI. 169; XIII. 747.
 CANDELABRUM, VI. 169, 172.
 CANDESH, VI. 169. See Khandesh.
 CANDIA, island and city, VI. 169; XXI. 380—siege of, by the Turks, 370—weights and measures of, 810.
 CANDIAC (J. L. P. Elizabeth de Montcalm de), VI. 170.
 CANDIDATE, VI. 170.
 CANDLE, VI. 170—medicated, 171—rush, ib.—sale by inch of, ib.—excommunication by inch of, ib.—how to light one by electricity, VIII. 590—its manner of burning, XIII. 170—from palm-oil, XVI. 494.
 Candleberry, V. 207.
 CANDLEMAS, VI. 172.
 CANDLESTICK, VI. 172.
 CANDOLLE (Augustin Pyramus de), VI. 172—on the rotation of crops, II. 416—on the colours of flowers, V. 151—his classification of plants, 179.
 — (Alphonso de), his experiments on the vitality of seeds, V. 164.
 CANDY, VI. 172. See Kandy.
 — a preparation of sugar, VI. 172. See Sugar-candy.
 CANDYING, VI. 172.
 CANE, tribe of plants, VI. 172—sugarcane, IX. 759, see Sugar-cane—cane-sugar, II. 380; VIII. 47; IX. 756.
 — measure of length, VI. 172.
 — river, VI. 172.
 CANEA, or Khandia, in Candia, VI. 172; XIII. 76.
 Caneparius's treatise on inks, XII. 384.
 CANEPHOROS, VI. 172.
 CANES VENATICI, a constellation, VI. 173.
 CANGE (Charles du Fresne, Sieur du), VI. 173—on the different kinds of churches, 235—his mistake regarding lazarehouses, XIII. 340.
 CANGI, ancient inhabitants of Britain, VI. 173.
 CANGIAGIO (Luca), painter, VI. 173.
 Cania, in Candia, XIII. 76.
 CANICATTI, town in Sicily, VI. 173.
 CANICULA, Sirius or the Dog-star, VI. 173.
 Canicular period, VI. 670.
 CANICULUM, VI. 173.
 CANINE MADNESS, VI. 173; XXI. 575. See Hydrophobia.
 — teeth, in man, III. 25—in the lower animals, 107.
 CANINI (Giovanni Agnolo), VI. 173.
 CANIS, genus of mammalia, VI. 174; XIV. 159, see Dog—dentition of, XVI. 461.
 — major and minor, two constellations, VI. 174; IV. 80.
 CANISIUS, or De Hondt (Henry), VI. 174.
 CANITZ (F. R. Ludwig, Baron of), VI. 174.
 CANKER, VI. 174—in horses, XXI. 562—in the ear of dogs, 578.
 Cannaceae, nat. order of plants, V. 211.
 CANNÆ, town in Apulia, VI. 174—battle of, 295; XI. 209; XIX. 301; XXI. 711.
 Cannaletti, painter, XVII. 72. See Canale.
 CANNEL-COAL, VI. 174; VII. 118; XV. 123—gas yielded by, X. 414.
 CANNES, French town, VI. 174—perfumes manufactured at, XVII. 408.
 CANNIBAL, VI. 174.
 Cannibalism, practised by some American tribes, II. 682—revolting conclusion respecting it, from the supposed superiority of human flesh, III. 179—among the aborigines of Australia, IV. 259—in New Zealand, 267; XVI. 237—in the interior of Africa, XI. 779—among the Fijis, XVIII. 275; the Battas, III. 270; XX. 805—in Houssa, XI. 779.
 CANNING (George), VI. 174; XVII. 362—his accession to power, V. 601—duel with Lord Castlereagh, 606—declaration against Parliamentary reform, 635—bill for the admission of Catholic peers, ib.—appointed foreign secretary in 1823, 637—his eloquence and popularity, 639—formation of a ministry in 1827 by, 648—his death and character, 649—his corn-bill, ib.—his visit to Paris in 1826, X. 192—a disciple of Pitt, XVII. 741—his resolutions for improving the corn-laws, VII. 382—his conduct in reference to slave emancipation, XX. 324—how regarded by the Duke of Wellington, XXI. 829, 830.
 — (Lord), his law of 1857, relating to the newspaper press in India, XVI. 204—his proceedings on the outbreak of the Indian mutiny, 302.
 CANNON, VI. 177—casting of, 178, 181—boring of, V. 40—proof of, 42—early use of, in China, VI. 584; in Britain, XX. 121. See Artillery, Gunnery.
 Cannon bones, in mammalia, III. 82, 83.
 CANNONADE, VI. 187.
 CANO (Alonso), painter, VI. 187.
 CANOE, VI. 187.
 CANON, VI. 187—cardinal canons, ib.—domicillary—expectative—foreign—lay—regular—tertiary, ib.—in ecclesiastical law, VI. 187—apostolical canons, 188—paschal, ib.—in music, ib.; XV. 734—sylogistic canons, XIII. 610, 611, 627; Sir Wm. Hamilton's, 628.
 — inspired Scriptures, VI. 188; IV. 696, 697; XIX. 832. See the names of the different books of Scripture.
 — Law, VI. 188—study of the, 737; at Bologna, XXI. 449; and at Oxford, 453.
 CANONESS, VI. 191.
 CANONICA, VI. 191.
 CANONICAL, VI. 191—hours—obedience—sins—punishments—life—letters, ib.
 CANONICUM, VI. 191.
 CANONIST, VI. 192.
 CANONIZATION, VI. 192.
 CANONRY, VI. 192.
 CANOPUS, star, VI. 192; IV. 79—an Egyptian deity, VI. 192—the pilot of Menelaus, ib.—a town in ancient Egypt, ib.
 CANOPY, VI. 192; III. 508.
 CANOSA, VI. 192, 202.
 CANOVA (Antonio), VI. 192; XXI. 238—character of his sculpture, XIX. 864—busts by, at Venice, XXI. 538.
 Canrobert (General), XIX. 504.
 CANSO, in Nova Scotia, VI. 195, 205.
 CANSTATT, town in Würtemberg, VI. 195.
 CANT, VI. 195.
 Cant-body, in ship-building, XX. 184.
 CANTABRIA, VI. 196; IV. 733—Cantabrian mountains, IX. 382—language, XIII. 214.
 Cantabrigiensis (Codex), XIX. 838.
 CANTABRUM, VI. 196.
 CANTACUZENUS (Johannes), emperor of the East, VI. 196.
 Cantæ, Caledonian tribe, VI. 74.
 CANTAL, in France, VI. 196.
 CANTARINI (Simone), VI. 196.
 CANTEMIR (Demetrius), VI. 196.
 — (ANTIOCHUS), VI. 197.
 Cantener (L. P.), his works on insects, IX. 18.
 Canterac, Spanish commander in America, IV. 818.
 CANTERBURY, VI. 197—archbishop of, III. 423; VIII. 743—its suffragan bishoprics, III. 423—Becket's shrine at, IV. 562—population of, XIII. 67—cathedral library at, 395.
 — province in New Zealand, XVI. 235.

CAN—CAN

riority of human flesh, III. 179—among the aborigines of Australia, IV. 259—in New Zealand, 267; XVI. 237—in the interior of Africa, XI. 779—among the Fijis, XVIII. 275; the Battas, III. 270; XX. 805—in Houssa, XI. 779.
 CANNING (George), VI. 174; XVII. 362—his accession to power, V. 601—duel with Lord Castlereagh, 606—declaration against Parliamentary reform, 635—bill for the admission of Catholic peers, ib.—appointed foreign secretary in 1823, 637—his eloquence and popularity, 639—formation of a ministry in 1827 by, 648—his death and character, 649—his corn-bill, ib.—his visit to Paris in 1826, X. 192—a disciple of Pitt, XVII. 741—his resolutions for improving the corn-laws, VII. 382—his conduct in reference to slave emancipation, XX. 324—how regarded by the Duke of Wellington, XXI. 829, 830.
 — (Lord), his law of 1857, relating to the newspaper press in India, XVI. 204—his proceedings on the outbreak of the Indian mutiny, 302.
 CANNON, VI. 177—casting of, 178, 181—boring of, V. 40—proof of, 42—early use of, in China, VI. 584; in Britain, XX. 121. See Artillery, Gunnery.
 Cannon bones, in mammalia, III. 82, 83.
 CANNONADE, VI. 187.
 CANO (Alonso), painter, VI. 187.
 CANOE, VI. 187.
 CANON, VI. 187—cardinal canons, ib.—domicillary—expectative—foreign—lay—regular—tertiary, ib.—in ecclesiastical law, VI. 187—apostolical canons, 188—paschal, ib.—in music, ib.; XV. 734—sylogistic canons, XIII. 610, 611, 627; Sir Wm. Hamilton's, 628.
 — inspired Scriptures, VI. 188; IV. 696, 697; XIX. 832. See the names of the different books of Scripture.
 — Law, VI. 188—study of the, 737; at Bologna, XXI. 449; and at Oxford, 453.
 CANONESS, VI. 191.
 CANONICA, VI. 191.
 CANONICAL, VI. 191—hours—obedience—sins—punishments—life—letters, ib.
 CANONICUM, VI. 191.
 CANONIST, VI. 192.
 CANONIZATION, VI. 192.
 CANONRY, VI. 192.
 CANOPUS, star, VI. 192; IV. 79—an Egyptian deity, VI. 192—the pilot of Menelaus, ib.—a town in ancient Egypt, ib.
 CANOPY, VI. 192; III. 508.
 CANOSA, VI. 192, 202.
 CANOVA (Antonio), VI. 192; XXI. 238—character of his sculpture, XIX. 864—busts by, at Venice, XXI. 538.
 Canrobert (General), XIX. 504.
 CANSO, in Nova Scotia, VI. 195, 205.
 CANSTATT, town in Würtemberg, VI. 195.
 CANT, VI. 195.
 Cant-body, in ship-building, XX. 184.
 CANTABRIA, VI. 196; IV. 733—Cantabrian mountains, IX. 382—language, XIII. 214.
 Cantabrigiensis (Codex), XIX. 838.
 CANTABRUM, VI. 196.
 CANTACUZENUS (Johannes), emperor of the East, VI. 196.
 Cantæ, Caledonian tribe, VI. 74.
 CANTAL, in France, VI. 196.
 CANTARINI (Simone), VI. 196.
 CANTEMIR (Demetrius), VI. 196.
 — (ANTIOCHUS), VI. 197.
 Cantener (L. P.), his works on insects, IX. 18.
 Canterac, Spanish commander in America, IV. 818.
 CANTERBURY, VI. 197—archbishop of, III. 423; VIII. 743—its suffragan bishoprics, III. 423—Becket's shrine at, IV. 562—population of, XIII. 67—cathedral library at, 395.
 — province in New Zealand, XVI. 235.

CAN—CAP

CANTERUS (William), VI. 198.
 Cantharidae, family of insects, IX. 134.
 CANTHARIDES, Spanish flies, VI. 198; XVII. 702—eaten by hedgehogs, III. 179.
 Cantharidine, XIV. 439.
 Cantharis, genus of insects, IX. 136—poisoning by *C. vesicatoria*, XIV. 439.
 Cantharus, genus of fishes, XII. 287.
 Canthidermis, genus of fishes, XII. 313.
 CANTICLES, VI. 198.
 — early printed work, so named, XVIII. 523.
 CANTILEVER, VI. 199.
 CANTIUM, VI. 199.
 CANTO, VI. 199.
 CANTO-FERMO, VI. 199.
 CANTON, small state, VI. 199—in heraldry, XI. 330—cantons of Switzerland, XX. 882.
 — in China, VI. 199—opened to British commerce by the treaty of 1842, 597—painters of, 581—variation of the needle at, XIV. 53—commerce of, VI. 590, 591—exports and imports, 591—silver exported from England to, XVIII. 472—tea imported from, by Britain and United States, XXI. 91.
 — (JOHN), VI. 201—his life and character, I. 723, n. 1—the compressibility of water first demonstrated by, ib.; II. 102; XII. 77—Beccaria's letter to, IV. 561—on aurora borealis, 250—his labours in electricity, VIII. 528—on the electricity of clouds, 581—his phosphorus, XIII. 456, 457—on magnetism, XIV. 6, 54—his artificial magnets, 69.
 CANTONI (Simone), architect, VI. 202.
 CANTONING of soldiers, VI. 202.
 Cantons, Lake of the Four, XX. 889.
 CANTON'S PHOSPHORUS, VI. 202.
 Cantor (Dr), on the fishery of the Polynemus, XII. 278—on the fighting-fish of Siam, 289.
 Cantova (P. Juan Antonio), on the Caroline islands, XVIII. 269.
 CANTRED, or Cantreth, VI. 202.
 CANTYRE, VI. 202; XIII. 95—Mull of, VI. 202.
 CANUS, or Cano (Melchior), VI. 202.
 CANUSIUM, now Canosa, in Apulia, VI. 202.
 CANUTE, or Knut, VI. 202; VII. 739—reign of, VIII. 661—62—fleet of, XX. 119—forest laws of, 209.
 Canutson (Charles), XX. 845.
 CANVAS, VI. 203—whether used by ancient painters, XVII. 52, n. 5.
 CANY, French town, VI. 203.
 Canynge (William), his ships, XX. 124.
 CAOUTCHOUC, VI. 203; V. 73, 206, 294; IX. 537—scarcely compressible, I. 876, n. 2—its use in making bougies, V. 243—value of the imports of, VIII. 734—pens made of, XVII. 400—mineral, IV. 736; XV. 124—quantity exported from Para, XVII. 265—setons made of, XX. 827.
 Caoutchoucine, VI. 204.
 Cap (M.), on the uses of glycerine, X. 685.
 — VI. 204—of maintenance, 205.
 — percussion, XI. 98—composition of, VI. 474; XI. 158, n.
 CAPACITY, VI. 205.
 CAPALUAN, island, VI. 205.
 CAPARASON, or caparison, VI. 205.
 CAPE, VI. 205; X. 483.
 — BRETON, island, VI. 205.
 — CLEAR, VI. 205; VII. 372.
 — COAST CASTLE, VI. 205; VII. 45.
 — FEAR RIVER, VI. 205, 246.
 — HATTIEN, town in the island of Hayti, VI. 205; XI. 258.
 — HORN, VI. 205; XI. 631.
 — Marmot, or Cavy, XIV. 199.
 — OF GOOD HOPE, VI. 205; X. 711. See Good Hope (Cape of).
 — Town, X. 714—Table Mountain and the "table-cloth," XIV. 655.
 — VERD, VI. 205; II. 229; XXI. 543.
 CAPEL (Lord Arthur), VI. 205—his execution, V. 413.
 CAPELL (Edward), VI. 206.
 CAPELLA (M. Mineus Felix), VI. 206.
 — star, VI. 206; IV. 79, 82.

CAP—CAP

Capello (Admiral), his expeditions against the Algerines, II. 570.
 CAPELLUS (Ludovicus), theologian, VI. 206.
 Caper, order of plants, V. 182.
 — spurge, V. 206.
 CAPERCAILZIE, VI. 206; IX. 762; XVI. 791—shooting, XX. 225—in Norway, XVI. 324.
 CAPERNAUM, VI. 206; XVII. 186.
 CAPEROLANS, VI. 206.
 CAPERS, VI. 207; V. 182.
 Capet (Hugh), X. 11.
 Capetian dynasty, X. 239.
 CAPH, Jewish measure, VI. 207.
 CAPIAS, executive writ, VI. 207.
 CAPIDJI, VI. 207.
 CAPILLARY, VI. 207.
 — ACTION, VI. 207; XII. 90; I. 890—experiments on, by Hauksbee, Taylor, Jurin, &c., 731, 732—Poisson's theory of, XII. 75—Laplace on, I. 820, 890, 732—its effects on barometrical tubes, IV. 455.
 — vessels of the human body, II. 796; XVII. 662.
 — in the lungs and foot of the toad and frog, II. 797—pulmonary capillaries, 798—calibre of the tubes, ib.
 CAPILUPI (Camillo and Lelio), VI. 219.
 CAPISCOLUS, VI. 219.
 CAPITAL, VI. 219.
 — in architecture, III. 508.
 — in political economy, defined, VII. 193—alone gives employment to labour, 139—accumulation and employment of, XVIII. 232 *et seq.*—required for working a farm, II. 366—its natural distribution disturbed by indirect taxes, XXI. 57—taxes falling on, 38, 43—not a proper test of the ability of a country to bear taxation, 75—wages dependent on the amount of, 675—comparative increase of, 676—inefficiency of government interference to increase, 677.
 — punishments, XIV. 445—cases, in England and Wales, VIII. 750.
 CAPITANATA, in Naples, VI. 219; XX. 255.
 CAPITANIA, VI. 219.
 CAPITATION TAX, VI. 219.
 CAPITE, in law, VI. 219—censl, ib.
 CAPITO, or Koepstein (Wolfgang Fabricius), VI. 219.
 CAPITOL, in Rome, VI. 219; XIX. 358—museum of the, 369.
 — at Washington, XXI. 766, 431.
 CAPITOLINE GAMES, VI. 220.
 — hill, XIX. 356, 357.
 CAPITOLINUS (Julius), historian, VI. 220.
 CAPITULARIES, VI. 220.
 CAPITULATION, VI. 221.
 CAPITULUM, VI. 221—in botany, V. 115.
 CAPMANY (Antonio de Montpalan y), VI. 221—on insurance, XII. 393.
 Capnio (Johann). See Reuchlin.
 CAPNOMANCY, VI. 221.
 Capo di Monti, porcelain factory of, XVIII. 438.
 CAPO D' ISTRIA, in Illyria, VI. 221.
 — (JOHN), count, VI. 221; XI. 23, 29, 30.
 Capota, genus of fishes, XII. 257.
 CAPON, VI. 221.
 CAPONIERE, in fortification, VI. 221.
 Caporicianite, mineral, XV. 75.
 CAPPADOCIA, VI. 221—coins of, XVI. 378.
 — AD TAURUM, VI. 221; XV. 283.
 Capparidaceae, nat. order of plants, V. 182.
 Capped Hock, XXI. 559.
 CAPPERONIER (Claude), VI. 223—his edition of Quintilian, V. 787.
 CAPPOQUIN, town in Ireland, VI. 223.
 Capra, genus of mammalia, XIV. 211.
 CAPRAJA, ancient Capraria, island, VI. 223; XIX. 633.
 CAPRI, island near Naples, VI. 223; XX. 240—azure grotto at, XVII. 574—Tiberius's abode on, XXI. 245—wines of, 886.
 CAPRIATA (Pietro Giovanni), VI. 223.
 CAPRICORN, VI. 223—tropic of, 224; IV. 11; X. 481.
 Caprification, V. 152; IX. 536; XI. 708.

CAP—CAR

Caprifoliaceae, nat. order of plants, V. 195—region of, XVII. 627.
 Caprimulgus, genus of birds, XVI. 758.
 Caprina, fossil mollusks, XVII. 107.
 Caprinella, fossil mollusks, XVII. 107.
 Caprodon, genus of fishes, XII. 265.
 Capromys, genus of mammalia, XIV. 180.
 Caprophonus, genus of fishes, XII. 299.
 Capros, genus of fishes, XII. 299.
 Caprotina, fossil mollusks, XVII. 107.
 CAPSA, town in Numidia, VI. 224.
 CAPSICUM, VI. 224, 357; V. 201; XI. 745; XIV. 717.
 CAPSTAN, VI. 224; XIV. 415; XX. 23.
 Capsule, in botany, V. 137.
 — of the eye, III. 44.
 CAPTAIN, VI. 226—naval, XVI. 103—of the fleet, ib.
 CAPTION, in Scots law, VI. 226.
 CAPTIVITY, VI. 226; XII. 767.
 CAPTURE, VI. 226.
 CAPUA, VI. 226—taken by Hannibal, 296—Hannibal's conduct at, ib.—taken by the Romans, 298.
 Capuchin monkey, dentition of, XVI. 455.
 CAPUCHINS, VI. 226.
 CAPUT, VI. 227—Baroniae—Lupinum—Mortuum, ib.
 Capybara, in zoology, XIV. 188—teeth of, XVI. 453, 454.
 CAR, VI. 227.
 Carabici, tribe of insects, IX. 80.
 CARABINE, VI. 227.
 CARABINEERS, VI. 227.
 Carabolo, battle of, IV. 818.
 Carabus, genus of insects, IX. 96.
 Caracal, in zoology, XIV. 171.
 CARACALLA, Roman emperor, VI. 227; XIX. 346—his cruelties at Alexandria, II. 470; XIV. 455—baths of, IV. 505—circus of, VI. 734—his war with the Parthians, XVII. 313.
 — an ancient Roman garment, VI. 227.
 Caracanthus, genus of fishes, XII. 282.
 Caracara, genus of birds, XVI. 741.
 CARACAS, in Venezuela, VI. 227; XXI. 537—climate of, II. 673.
 CARACCI (Lodovico), VI. 227; XVII. 73.
 — (AGOSTINO), VI. 227; XVII. 73.
 — (ANNIBALE), VI. 227; XVII. 73—on the works of Coreggio, II. 588.
 Caraccioli, the letters of Pope Clement XIV. written by, VI. 761.
 — (Francesco), Prince, execution of, XVI. 136.
 CARACOL, VI. 228.
 — town in Guayaquil, XI. 78.
 CARACTACUS, British king, VI. 228; V. 277.
 Caradoc sandstones, XV. 196.
 CARAITES, or Karaites, Jewish sect, VI. 228; VII. 504, 505—in Russia, XIX. 523.
 CARAMAN, in Asia Minor, VI. 229.
 CARAMANIA, VI. 229—Alexander the Great in, XIII. 771.
 Caramaru, V. 280, 281.
 Carambola, tropical fruit, XI. 729.
 CARAMNASSA, river in Hindustan, VI. 229.
 Carangas, silver mines of, IV. 825.
 Carangichthys, genus of fishes, XII. 297.
 Carangus, genus of fossil fishes, XII. 345.
 Caranx, genus of fishes, XII. 297.
 Carapus, genus of fishes, XII. 234.
 CARAT, VI. 229; III. 767; VIII. 2; XV. 430 and *n.* 1.
 Caraudau, his process for manufacturing alum, II. 641.
 CARAUSIUS, emperor of Britain, VI. 229; V. 380; II. 586.
 CARAVACA, in Spain, VI. 229.
 CARAVAGGIO, town in Lombardy, VI. 229.
 — (MICHAEL ANGELO AMERIGHI DA), VI. 229; XVII. 69.
 — (POLIDORO CALDARA DA), VI. 230.
 CARAVAN, VI. 230—Asiatic commercial, III. 751, 755; VII. 640—of Morocco, XV. 597—from Damascus, VII. 640—in Tunis, XXI. 365—of Chinese Turkistan, 367.
 CARAVANSERAI, VI. 230; XVII. 424—number in Baghdad, IV. 363.

CAR—CAR

CARAVANSERASKIER, VI. 230.
 CARAWAY, VI. 230; V. 195; XI. 745—oil of, XVI. 496—seed, II. 337—cultivated in Essex, IX. 337.
 CARBON, VI. 230; 471, XV. 64, 145—in plants, II. 374; V. 94—bisulphuret of, 477—its compound with hydrogen, nitrogen, and chlorine, 473, 474—alimentary principles containing, VIII. 18, 19—quantity given off by the lungs, XVII. 663—in coal, XX. 629. See Charcoal.
 Carbonaceous substances, composition of, XV. 146—as food, XIX. 610.
 CARBONARI, VI. 231; XII. 655.
 Carbonate of lime, XV. 91, 142—silver, 107—magnesia, 145—iron, XII. 540.
 Carbonates of potash and soda as manure, II. 413.
 Carbonic acid, VI. 471, 472—a component part of the atmosphere, IV. 181; II. 375; VI. 464—its influence on health, XIX. 609—absorbed by the leaves of plants, II. 379; IV. 182; V. 105—decomposition of, II. 383; V. 105—Dr Black's discovery of, IV. 737—Mr Cavendish on, VI. 351—in mines and coal-pits, VII. 643—poisonous quality of, XIV. 436; XVIII. 135—specific gravity of, XII. 89—mode of separating it from coal-gas, X. 416—deterioration of coal-gas by mixture with, 432—springs impregnated with, XVII. 602—produced by respiration, 662, 665; XVIII. 73—in mineralogy, XV. 61—compressibility of, XX. 564.
 — oxide, VI. 471; X. 430—poisonous quality of, XIV. 436.
 Carboniferous period, in geology, XV. 200—upper series of rocks, 202—plants of, V. 234; XVII. 640—fishes of, XII. 348, 349, 350, 351; XVII. 117, 125, 640—formations in Russia, XIX. 517; in Scotland, 790, 791.
 Carbonometer, described, XXI. 542.
 CARBOY, VI. 231.
 CARBUNCLE, VI. 231.
 — in heraldry, VI. 231.
 Carburetted hydrogen, X. 430—in the air, II. 376—the cause of "ignis fatuus," X. 409—its poisonous quality, XIV. 436—discharged from the earth, XVII. 602.
 CARCAGENTE, Spanish town, VI. 231.
 Carcass-roofing, XIX. 387.
 CARCASSONNE, in France, VI. 231.
 Carcel's lamp, XIII. 172.
 CARCERES, VI. 231.
 Carcharias, genus of fishes, XII. 323—fossil, 341—teeth of, XVI. 422.
 Carcharidae, family of fishes, XII. 321, 323.
 Carcharodon, genus of fishes, XII. 324—fossil, 341—teeth of, XVI. 422.
 CARD, for combing wool, VI. 231—for cotton, VII. 443.
 — punching, XXI. 787. See Carding.
 CARDAMOMS, VI. 232; V. 211.
 CARDAN (Jerome), VI. 232—an instance of the union of genius with weakness, I. 557—on aeronautics, II. 168—his improvements in algebra, 484, 517; I. 557.
 Cardan's rule, XXI. 339.
 CARDASS, VI. 232.
 CARDERS, VI. 232.
 CARDIA, city in the Thracian Chersonesus, VI. 232.
 CARDIAC, VI. 232.
 Cardiacæ, family of mollusks, XV. 349—fossil, XVII. 107.
 CARDIFF, in Glamorganshire, VI. 232; X. 642.
 CARDIGAN, VI. 234.
 — (Earl of), XIX. 505.
 CARDIGANSHIRE, VI. 233—lead mines of, XV. 245—population and value of property, VIII. 754.
 Cardilia, fossil mollusks, XVII. 107.
 CARDINAL, VI. 235—numbers, ib.—signs, ib.—winds, ib.
 — points, VI. 235; IV. 1; X. 480.
 — ecclesiastical prince in the Romish Church, VI. 235—cardinals in France, X. 267—classes of, XVII. 244—college

CAR—CAR

of cardinals, VII. 113; VI. 235; election of a pope by, XVIII. 317.
 Cardinia, fossil mollusks, XVII. 108.
 Carding of cotton, improvements in, by Hargreaves, VII. 441—and by Arkwright, 443—wool-carding engine, XXI. 922—in weaving, 787.
 CARDIOD, an algebraic curve, VI. 236.
 Cardiola, fossil mollusks, XVII. 106.
 Cardiomorpha, fossil mollusks, XVII. 108.
 Cardiopoda, genus of mollusks, XV. 377.
 Cardita, genus of mollusks, XV. 350—fossil, XVII. 108.
 Carditis in animals, XXI. 574.
 Cardium, genus of mollusks, XV. 349, 347—fossil, XVII. 107.
 CARDONA, Spanish town, VI. 236—precipice of rock-salt at, XVII. 623.
 Cardoon, culture of, XI. 743.
 CARDS, playing, VI. 231—early history of, XVIII. 523.
 CARDUCHI (the modern Kurds), VI. 236; XIII. 136.
 Carduelis, genus of birds, XVI. 761.
 CAREENING of ships, VI. 236.
 CAREER, VI. 236.
 Carelophus, genus of fishes, XII. 310.
 Careni, Caledonian tribe, VI. 74.
 CARET, VI. 236.
 CAREW (George), VI. 236.
 — (GEORGE), earl of Totness, VI. 236; XII. 479.
 — (RICHARD), author of the Survey of Cornwall, VI. 236.
 — (THOMAS), English poet, VI. 237; XVIII. 122.
 CAREY (Henry), VI. 237.
 — (H. C.), on international copyright, V. 32—on the sales of British works in America, ib.
 — (WILLIAM), VI. 237.
 Carez, his polytypes, XVIII. 552.
 CARGADORS, VI. 237.
 CARGILL (Donald), one of the leaders of the Covenanters, VI. 237; V. 432.
 CARGO, VI. 237—super-cargo, ib.
 CARIA, in Asia Minor, VI. 237—coins of, XVI. 376.
 CARIACO, town in Venezuela, VI. 238.
 Cariacou, island, XI. 58.
 Cariana, genus of birds, XVI. 797.
 Carianers, Asiatic tribe, XIII. 55.
 Carians, their war with the Egyptians, VIII. 459.
 CARIBBEAN SEA, VI. 238; XVII. 577.
 CARIBBEE ISLANDS, VI. 238; III. 272; XXI. 837—granted by James I. to the Earl of Carlisle, IV. 429. See Antilles, Lesser.
 Caribbs, XI. 57; IX. 348; XXI. 837—their skulls and complexions, II. 677—their character, 683—in Honduras, XI. 614—language, XIII. 224.
 Caribert, X. 4.
 CARICATURE, VI. 238.
 CARICOUS, VI. 238.
 Carides, crustacea, VII. 541.
 Caries, disease in the bones of animals, XXI. 557.
 CARIGNANO, Italian city, VI. 238.
 CARILLON, a chime of bells, VI. 238.
 CARIMATA, island, VI. 238.
 CARINA, VI. 238—in botany, V. 124.
 Carinaria, genus of mollusks, XV. 377—*C. Mediterranea*, ib.—fossil, XVII. 109.
 CARINI, town of Sicily, VI. 238.
 CARINTHIA, VI. 238; IV. 311, 309; XII. 364.
 Caris, genus of arachnides, III. 389.
 CARISBROOKE, VI. 238; XXI. 862—Charles I. prisoner at, V. 410, 411.
 CARK, VI. 238.
 Carlen (Madame), her novels, XIX. 293, 702.
 CARLETON (Sir Dudley), VI. 238; V. 390.
 CARLI (Gian-Rinaldo, Count of), VI. 238—on castes among the Peruvians, 316.
 CARLINE, or Caroline thistle, VI. 239.
 — Neapolitan silver coin, VI. 239.
 CARLINES, in a ship, VI. 239.
 CARLINGFORD, Irish town, VI. 239—light-house of, XIII. 466—bay, 701.

CAR—CAR

Carlings of a ship, XX. 187. See Carlines.
 Carlini (M.), of Milan, I. 826, 827.
 CARLISLE, VI. 239—table of mortality at, III. 255; XII. 400—railway, XXI. 842.
 — fifth earl of, VI. 239.
 — (Sir ANTHONY), VI. 239—on the chemical effects of the voltaic pile, I. 965; XXI. 628.
 Carlists, XX. 477, 480 *et seq.*
 CARLOCK, VI. 239.
 Carloman, X. 7, 578.
 CARLOS (Don), his attempts to obtain the Spanish crown, XX. 477, 478 *et seq.*, 481—takes refuge in France, X. 210—renunciation of his claim to the Spanish crown, XX. 482.
 — (SAN), town in Venezuela, VI. 239.
 CARLOVINGIAN, dynasty, VI. 239; X. 11, 239.
 CARLOW, in Ireland, VI. 239, 240—extent of land under crops, XII. 515—produce of crops, 517.
 CARLOWITZ, Austrian town, VI. 241.
 CARLSBAD, in Bohemia, VI. 241—climate, XIV. 678—its thermal springs, XV. 37, 39 and *n.* 1; XVII. 602.
 CARLSBURG, in Transylvania, VI. 241.
 CARLSHAMN, in Sweden, VI. 241.
 CARLSKRONA, in Sweden, VI. 241.
 Carlson (B. A.), his work on insects, IX. 20.
 CARLSRUHE, German city, VI. 241.
 CARLSTAD, in Sweden, VI. 241, 242.
 CARLSTADT, in Croatia, VI. 242.
 — Luther's opposition to his views respecting the real presence, XIII. 730, 731; XVIII. 821.
 CARLUKE, in Lanarkshire, VI. 242.
 CARLYLE (Joseph Dacre), orientalist, VI. 242.
 — (Thomas), on Novalis, XVI. 342—his Life of Sterling, XX. 691, 692—on Talleyrand, XXI. 11, 14—his character of Wither's poetry, 896.
 CARMAGNOLA (Francesco Bussone di), VI. 242.
 — town in Piedmont, VI. 242.
 CARMEL (Mount), VI. 242; XVII. 182.
 CARMELITES, order of mendicant friars, VI. 242; XVII. 182.
 CARMENTALIA, Roman festival, VI. 243.
 CARMICHAEL (Arch. Nisbet), of the Edinburgh Academy, VI. 243.
 — (J. and C.), their steam-engine valve-gear, XX. 584.
 — (Prof.), on Grotius, I. 88.
 — (Sir T. Gibson), his experiment in irrigation, XII. 620.
 CARMINATIVE, VI. 243.
 CARMINE, VI. 243—in dyeing, VIII. 284.
 CARMONA, Spanish town, VI. 243.
 CARNAC, French village, VI. 243.
 — temple of, VI. 243; III. 436; VIII. 507, 461—to whom dedicated, XI. 384 and *n.* 7.
 Carnat, mineral, XV. 84.
 CARNATIC, in India, VI. 243; XI. 499 *et seq.*
 CARNATION, in painting, VI. 244.
 — flower, VI. 244—culture of, XI. 753.
 CARNAUL, VI. 244. See Kurnool.
 Carne (Mr.), on the produce of the Cornish tin mines, XV. 241.
 CARNEADES, founder of the New Academy at Athens, VI. 244—Grotius' estimate of his ethics, I. 331.
 CARNEDD, VI. 244.
 CARNEIA, ancient festival, VI. 244.
 CARNELIAN, VI. 244, 67; II. 231; XV. 60—mines of, in Hindustan, XI. 458.
 Carnic Alps, II. 624.
 CARNIFEX, VI. 244.
 CARNIOLA, VI. 244; IV. 311, 309; XIII. 135.
 CARNIVAL, VI. 244.
 Carnivora, XIV. 153—their bones, III. 79 *et seq.*—muscles, 91—organs of smell, 94—dentition, XVI. 459 *et seq.* 464—eyes, III. 97—long intestines, 110—peculiarities of organisation, 172—flesh generally unfit for food, 179—pairing of, 181—oils from, XVI. 493—of Africa, II. 217—of America, 713—fossil, XVII. 171—distribution of, 631.

CAR—CAR

Carnivora, insects, IX. 77.
 CARNIVOROUS, VI. 244.
 Carnonacæ, Caledonian tribe, VI. 74.
 CARNOT (Lazare Nicolas Marguerite), VI. 245; X. 132—on the defence of fortified places, IX. 816—his merits as an engineer, 833—on the character of Talleyrand, XXI. 12.
 Carnore Point, XXI. 845, 846.
 CARNUNTUM, VI. 245.
 CARO (Annibale), Italian poet, VI. 245.
 Carob-tree, V. 190.
 Carocolla, genus of mollusks, XV. 373.
 CAROLAN (Twalagh), blind harper, VI. 245.
 Caroli (Peter), VI. 109.
 CAROLINA (North), VI. 245; XXI. 419—newspapers of, XVI. 195—rice in, XIX. 157—settlers in, XXI. 433—debt of, 428.
 — (South), VI. 247; XXI. 419—newspapers of, XVI. 195—rice in, XIX. 157—tea-plant in, XXI. 81—settlers in, 433—debt of, 428—opposition to the union, 441.
 Caroline, consort of George IV., V. 612, 614, 627—her arrival in London, 628—bill of pains and penalties against, 629—trial, *ib.*—death, 633—character of the proceedings against her, 629.
 — consort of George II., her conversations with Whiston, XXI. 850.
 — ISLANDS, VI. 248; XVII. 583; XVIII. 269.
 — Books, VI. 248.
 CAROLOSTADT (Andrew Bodenstein), VI. 248.
 CAROLUS, gold and copper coins so called, VI. 248; XII. 669.
 CAROMEL, or Caramel, VI. 248; V. 331.
 Caron (M.), on European imports to Japan, XII. 696.
 CAROOR, town in Hindustan, VI. 248.
 CARORA, in Venezuela, VI. 248.
 CAROTIDS, arteries, VI. 248; III. 65.
 CAROUGE, town in the canton of Geneva, VI. 248.
 CARP, VI. 248; IX. 764; XII. 255—angling for, III. 160.
 CARPÆA, ancient dance, VI. 248.
 Carpal bones, III. 33, 81, 86.
 CARPATHIAN MOUNTAINS, VI. 248; IV. 312; IX. 382; XII. 9, 10; XVII. 596; XIX. 514; XXI. 682; heights of, XVII. 642.
 Carpathium mare, VI. 249.
 CARPATHUS, now Scarpanto, island, VI. 249.
 Carpel, in botany, V. 118, 129, 134.
 CARPENTARIA (Gulf of), VI. 249.
 CARPENTER (Lant, LL.D.), VI. 249.
 — (Dr), on odorous emanations, XIV. 564—his objection to Brewster's theory of the line of visible direction, 574, *n.* 3—on fairy rings, IX. 471—on mollusks, XV. 327, 337—on the organology of phrenology, XVII. 559—on cerebral action, 561—on zoophytes, XXI. 1006, 1007.
 — VI. 249—distinguished from a joiner, V. 746—work of, in building, *ib.*; in a farm steading, II. 372—health of carpenters, XIV. 442—naval, XVI. 104.
 — (General), V. 454.
 Carpenteriana, II. 739.
 CARPENTRAS, in France, VI. 249; XXI. 530.
 CARPENTRY, VI. 249—skill of the Romans in, III. 445—distinguished from joinery, XII. 804—strength of different kinds of wood, VI. 249; XX. 170 *et seq.*; of beams, 760 *et seq.*, 768, 769. See Beams, Centre, Joinery, Roof, Strength of Materials, Timber, Wood.
 CARPENTUM, VI. 269.
 CARPET, VI. 269—weaving of, XXI. 780—French, X. 252; XXI. 920—of Kidderminster, XIII. 76; XXI. 928—Turkish, 384.
 CARPET-KNIGHTS, VI. 272.
 CARPI, town in Italy, VI. 272.
 — (GIROLAMO DA), painter, VI. 272.
 — (UGO DA), painter, VI. 273—his improvements in wood-engraving, XXI. 903.

CAR—CAR

Carpi (Dr), on the magnetism of the solar rays, XIV. 12.
 CARPINI (Giovanni de Plano), VI. 273; X. 469.
 CARPINO, Italian city, VI. 273.
 Carpobalsamum, IV. 401.
 Carpocrates, Gnostic, X. 688; VI. 273.
 CARPOCRATIANS, branch of the Gnostics, VI. 273.
 CARPOLOGY, VI. 273; V. 136.
 Carpus, in man, III. 33—the mammalia, 81—birds, 86.
 Carr (Mr), on weights and measures, XXI. 802.
 CARRAC, or Carrack, VI. 273; XX. 122.
 Carrageen, or Irish moss, V. 218.
 Carrantuohill, XIII. 72.
 CARRARA, Italian town, VI. 273—marble, *ib.*; XV. 92; XIX. 843.
 — (M.), his work on the Italian glow-worm, IX. 18.
 Carre (Robert), Earl of Somerset, V. 383.
 CARRENNO DE MIRANDA (Don Juan), painter, VI. 273.
 Carrera (Peter), on the eruptions of *Ætna*, II. 194-95.
 — (Juan Jose), a leader in Chili, VI. 553.
 Carrett, Marshall & Co., their steam-engines, XX. 608, 610, 614.
 Carrhæ, VII. 308—disaster of the Romans at, XVII. 311.
 CARRIAGE, VI. 273; VII. 42—duties on carriages, 43; XIII. 436—wheel carriages, II. 279—roadway, III. 493—metropolitan carriages act, XVIII. 194—for railways, 781, 783. See Coach, Chariot.
 CARRICK, district of, VI. 273; IV. 332.
 — ON SHANNON, in Leitrim, VI. 273; XIII. 329.
 — ON SUIR, in Tipperary, VI. 273; XXI. 288—woollen manufacture at, 770.
 CARRICKFERGUS, in Ulster, VI. 273; III. 283.
 CARRICKMACROSS, in Monaghan, VI. 274—coal near, XXI. 409—population, 411.
 CARRIER, VI. 274.
 — French revolutionist, X. 93, *n.* 1.
 — pigeon, VI. 275.
 — shells, XV. 382.
 Carrion-flowers, V. 152.
 CARRON, river in Scotland, VI. 275; XX. 702.
 — iron-works, VI. 276; IX. 474; XIX. 245; XX. 703; XXI. 702, 703, 775—strength of Carron iron, XII. 567, 569.
 — (Loch), fishery of, XIX. 427; IX. 640, 642.
 CARRONADE, VI. 276; XI. 140, 133—table of ranges for, 147—invented at Carron, XX. 703.
 CARROT, VI. 276; V. 195; IX. 760—culture of, II. 320; XI. 740.
 — fly, XI. 740.
 CARROUSAL, VI. 276.
 CARRUCA, ancient car; a plough, VI. 276.
 Carrucage. See Carvage.
 CARRUCATE, VI. 276.
 CARRYING, VI. 276.
 CARSE, VI. 276—of Gowrie, *ib.*; XVII. 456, 457, 458; XIX. 792—analysis of the soil of, II. 393—of Falkirk, IX. 474—of Stirling, VI. 276, 750; XIX. 791; XX. 703.
 CARSON (Aglionby Ross, LL.D.), rector of the High School of Edinburgh, VI. 276.
 CARSTAIRS (William), VI. 276.
 Carstens (Jan), his voyage, IV. 252.
 CART, VI. 277—of war, *ib.*—agricultural, II. 279.
 — rivers (White and Black), XIX. 8, 9; XVII. 89.
 Cart-horse, II. 388; XI. 661.
 Cartago, VII. 425.
 CARTE (Thomas), VI. 277.
 CARTE-BLANCHE, VI. 277.
 CARTEL, VI. 277—cartel-sh'p, *ib.*
 Carter (John), his work on pointed architecture, III. 457.
 Carteret (Captain), his discoveries in Australasia, IV. 264.
 — (Sir George), XVI. 176.
 — islands, IV. 264.

CAR—CAR

CARTES (Réné des), or DESCARTES, VI. 277; I. 56, 609—Condorcet's character of, 56—may be regarded as the father of the experimental philosophy of the mind, *ib.*—his clear and precise conception of *reflection*, 57—on the mind, *ib. et seq.*, 243—unacquainted with the works of Bacon, 244—the articles of common belief which he proposed to subject to severe scrutiny, 59—consciousness of his own existence, *ib.*; XIV. 616—his argument for the existence of God, I. 69, and *n.* 4; yet accused and persecuted as an atheist, 60, *n.* 1—his precocity of genius, 61—principal articles of his philosophy, 62—his mathematical researches the most solid basis of his fame, 62 and *n.* 1—his claims to the discovery of certain leading ideas erroneously ascribed to later metaphysicians, 63—early progress of his doctrines in England, 63, 64—coincidences between passages in his works and in *Novum Organon*, 59, 244—origin of the true philosophy of mind to be dated from his *Principia*, 67—his errors, 68—his theories as to the connection between soul and body, *ib.*—on the *primary* and *secondary* qualities of bodies, 63, 245—reasons why he fixed on the pineal gland as the seat of the soul, 69—Bacon never mentioned by, 70—merits of his *Meditations*, 243—erroneously called a nullibist, 246—his merits as a writer, 247—his doctrines concerning ideas misunderstood, 109, *n.* 2, 251-52—on the freedom of the will, 267—Coleridge's assertion, that he anticipated Hobbes in his discourse on method, erroneous, 444—his mode of philosophising opposite to that of Bacon, and greatly inferior, 584, 585—on the theory of motion, 594—on the preservation of the same quantity of motion in the universe, *ib.*—on centrifugal force, *ib.*—first who attempted to reduce all the phenomena of the universe to the same law, 609—his theory of vortices, 610—his claim to the discovery of the true law of refraction ill founded, 627—his theory of light, 628—his optical discoveries, 628-29, 747; II. 87; XVI. 530, 578—his explanation of the rainbow, 629—on the force of a moving body, I. 654—his improvements in, and new applications of, algebra, 560; II. 486; IX. 671—on the pressure of the atmosphere, IV. 450—his barometer, 453—his attempt to solve the problem of Apollonius, III. 302—his opinion of brutes, V. 700—on burning-glasses, VI. 1, 4—his theory of the deluge, VII. 720—on magnetism, XIV. 4—on equations, IX. 287—analytical geometry originated with, X. 542—on metaphysics, XIV. 600, *n.* 1 and 2 *et seq.*—did his opinions give rise to those of Spinoza? XVII. 234—on pneumatics, XVIII. 27—on telescopes, XXI. 119—his dictum, "*cogito ergo sum*," 185—on the ontological proof of the existence of God, 186, 187.
 Cartesian devils, XVIII. 51.
 CARTESIANS, VI. 280.
 CARTHAGE, VI. 280; VIII. 16—site of, II. 223—commerce, VII. 185—wars with the Romans, XIX. 309, 310; and Syracusans, VI. 283, 285; XX. 899—final destruction of, 314—conquests in Spain, 457—naval power of, 117—vessels, XVIII. 161, *n.* 2—foundation of, XXI. 405—ruins of, 365.
 CARTHAGENA, VI. 303—building of, 292.
 — or Cartagena, capital of New Granada, VI. 304; X. 797—British expedition against, V. 458—plundered by Pointis and the bucaniers, 712.
 Carthaginian alphabet (Punic), II. Plate—army, III. 629—voyages, X. 460, 461—human sacrifices, XIV. 361—slavery, XX. 320.
 Carthalo, Carthaginian general, VI. 289.
 Carthamus, a dye-stuff, VIII. 286.
 CARTHUSIANS, VI. 304; V. 697.

CAR—CAS

Cartier (James), Gulf of St Lawrence discovered by, II. 699; VI. 158.
 Cartilage, II. 831; IX. 758—whether contained in bone, II. 827, 829—structure of, 832—synovial membrane of, II. 840—ensiform, III. 9—the five cartilages of the larynx, 50—of the ribs, 10—of the windpipe, 66—fibro-cartilage, II. 832.
 Cartilaginous fishes, XII. 205, 319.
 Cartismandua, queen of the Britons, V. 377, 378.
 Cartland Craigs, XIII. 174—bridge at, III. 339.
 CARTOON, VI. 304; XIX. 867 and *n.*—Raphael's, XVII. 68—Angelo's, XVIII. 750.
 CARTOUCHE, VI. 305—in hieroglyphics, *ib.*
 CARTRIDGE, and cartridge-box, VI. 305—wire, XX. 214.
 CARTWRIGHT (Edmund), D.D., VI. 305—power-loom invented by, VII. 450; XXI. 787—his combing-machine, 924.—(Rev. Edward), his rope-machine, XIX. 406.
 —(THOMAS), Puritan divine, VI. 305.
 —(WILLIAM), VI. 305.
 CARUCATURUS, VI. 305.
 Caruncle of the eye, III. 45—in the ruminants, 97—wanting in the rodentia and in birds, 97.
 Caruncles, in botany, V. 140.
 CARUPANO, in Venezuela, VI. 305.
 Carus, Roman emperor, XIX. 349.
 —(C. Gustavus), his works on insects, IX. 15—his remarks on the dissection of minute animals, 29—on the circulation of an ephemera, 50—on the infusoria, III. 197—on phrenology, XVII. 565.
 CARVAGE, VI. 305.
 Carvalho, marquis of Pombal, his administration, V. 284, 285.
 CARVER, VI. 305—and gilder, V. 755.
 CARVING, VI. 305; XIX. 843.
 CARWAR, in Hindustan, VI. 306.
 CARY (Lucius), Lord Falkland, VI. 306. See Falkland.
 —(ROBERT), LL.D., VI. 306.
 —(Mr), his marine barometers, IV. 458.
 CARYA, or Caryatis, ancient festival, VI. 306.
 CARYATIDES, VI. 306; III. 442, 467, 508.
 Carychium, genus of mollusks, XV. 375.
 CARYL (John), English poet, VI. 306.
 —(JOSEPH), nonconformist divine, VI. 306.
 Caryocatactes, genus of birds, XVI. 765.
 Caryophyllaceæ, nat. order of plants, V. 184—region of, 227; XVII. 627.
 Caryophyllæus, genus of entozoa, XXI. 979.
 Caryopsis, a kind of seed-vessel, V. 137.
 CARYOTA, genus of palms, VI. 306.
 Carysfort (Lord), on weights and measures, XXI. 799.
 CASA SANTA, VI. 306. See Loretto.
 CASAL MAGGIORE, town in Lombardy, VI. 306.
 CASALE, in Italy, VI. 306.
 CASALNUOVO, Neapolitan town, VI. 306.
 Casanata library, at Rome, XIII. 412.
 Casanova, effects produced on, by a work entitled *La Cité Mystique*, &c., I. 442.
 CASAR-DE-CACERES, Spanish town, VI. 306.
 CASAS (Bartolommeo de las), VI. 306.
 CASATI (Paul), VI. 307.
 CASAUON (Isaac de), VI. 307; XVII. 523—on diptycha, VIII. 43—Casauboniana, II. 739—his intimacy with Denis Petau, XVII. 480—his editions of Strabo's Geography, XX. 744.
 —(MERIC), VI. 307.
 CASBIN, Persian city, VI. 308.
 Casbois (Prof.), his method of making barometers, XII. 101.
 CASCADE, VI. 308. See Waterfall.
 —mountains, XVI. 705; XVII. 645; XXI. 766.
 CASCAES, Portuguese town, VI. 308.
 CASCARILLA, a tonic bark, VI. 308; V. 206.
 Casco. See Cuzco.

CAS—CAS

CASE, VI. 308—in grammar, *ib.*; X. 748, 789—in printing, VI. 308; XVIII. 539—case-shot, VI. 308; XI. 142.
 CASE-HARDENING, VI. 308.
 Caseine (vegetable), II. 382; IX. 757—in the milk of the cow-tree, VII. 470.
 —(animal), the chief ingredient of cheese, VII. 624; VI. 523; XV. 11; XVII. 654; XIX. 610—composition of, II. 382.
 Casentino, in Tuscany, XXI. 393.
 CASERTA, town of Naples, VI. 308—palace of, XV. 782; XXI. 522.
 Cash-accounts, in Scotch banks, XV. 465.
 Cash-book, in book-keeping, V. 17—petty cash-book, 23.
 CASHAN, Persian city, VI. 308.
 CASHEL, in Tipperary, VI. 308; XXI. 287, 288—rock of, 286, 288.
 CASHEW, or Cashew-nut, VI. 308; V. 190; XVI. 395—yields a black dyestuff, VIII. 304.
 —order of plants, V. 189.
 Cashgar, III. 755; XIII. 54.
 CASHIER, VI. 308.
 CASHMERE, in northern India, VI. 308; XVII. 598—wool, XXI. 906—shawls, VI. 309; XIV. 211; exports of, from France, XXI. 920—trade with Turkestan, 367.
 —goat, XI. 455; XIV. 211.
 CASHY, in Hindustan, VI. 310.
 Casimir, kings of Poland so named, XVIII. 138, 140, 141, 142, 144; XX. 851.
 CASIRI (Michael), VI. 310.
 CASK, VI. 310—invention and construction of, VII. 341—made by machinery at Deptford, VIII. 80—gauging of, XIV. 524—large size of sherry casks, XXI. 951.
 CASLON (William), letter-founder, VI. 310.
 Casmarhynchus, genus of birds, XVI. 750.
 Casnomia, genus of insects, IX. 82.
 CASPE, Spanish city, VI. 310.
 Casper (Dr), on the statistics of mortality, XV. 623, 634.
 CASPIAN SEA, VI. 310; X. 469; XVII. 606—its level lower than that of the ocean, IV. 468; XVII. 591.
 —languages, XIII. 216.
 —gates, XVII. 420.
 CASQUE, VI. 312.
 CASSANA (Nicolo), Italian painter, VI. 312.
 CASSANDER, king of Macedon, VI. 312; XIII. 775.
 CASSANDRA, VI. 312.
 CASSANO, town of Naples, VI. 312.
 Cassation (Court of), in Belgium, IV. 614—in France, X. 282—the Two Sicilies, XX. 253.
 CASSAVA, VI. 313; V. 206, 294; XIV. 716.
 Casse (Du), his Memoires, XV. 796.
 Cassegrain (M.), his telescope, XVI. 533; XXI. 127.
 CASSEL, in Germany, VI. 313; XI. 362.
 —in France, VI. 313.
 Cassencarrie, granite quarry at, XIII. 101.
 CASSIA BARK, VI. 313; IV. 445; VI. 727—cassia buds, 313—oil of cassia, XVI. 496.
 Cassiani, ammonites, XVII. 113.
 CASSIANUS, or Joannes Eremita, VI. 313.
 Cassicus, genus of birds, XVI. 762.
 Cassida, genus of insects, IX. 148.
 Cassidaria, fossil mollusks, XVII. 110.
 Cassidariæ, family of insects, IX. 148.
 Cassidula, genus of mollusks, XV. 375.
 Cassidulidæ, fossil echinoidea, XVII. 100; XXI. 991.
 CASSIMIRE, or Cashmire, VI. 313. See Cashmere.
 CASSINI (Johannes Dominicus), VI. 313—director of the Royal Observatory of Paris, III. 802—his astronomical discoveries, I. 614; III. 803; IV. 69—on the planets Venus, Mars, and Jupiter, 65, 66, 69—his barometer, 454—on refraction, 9—on the orbits of comets, VII. 167—on the annual variation of the needle, XIV. 52, 53—his micrometer, 758—on the degree of meridian, IX. 549—his telescopes, XXI. 119.
 —(JAMES), VI. 313—his astronomical labours, III. 805.

CAS—CAS

CASSINI (De Thury, Cæsar François), VI. 313; III. 805—on the arc of meridian, IX. 549—his memorial to the British government respecting longitude, 550; XXI. 330.
 Cassino (Monte), XIII. 387.
 CASSIODORUS (Magnus Aurelius), VI. 313.
 CASSIOPEIA, VI. 314—a constellation, *ib.*; IV. 79.
 Cassiquiare, river, XVI. 716; XVII. 604.
 CASSIS, ancient helmet, VI. 314.
 —genus of mollusks, XV. 366—fossil, XVII. 110.
 —a French seaport, VI. 314.
 Cassiterides, V. 376.
 Cassiterite, mineral, XV. 109.
 Cassiterotantalite, XV. 110.
 Cassius (Avidius), XIX. 344.
 —(CAIUS), VI. 314.
 —(C. LONGINUS), VI. 314.
 —(LONGINUS and SPURIUS), VI. 314.
 —a Roman surgeon, XX. 812.
 —powder of, VI. 314.
 Cassivelaunus, British chief, V. 377.
 CASSOCK, VI. 314.
 CASSOON, in architecture, VI. 314; III. 508.
 CASSOWARY, or Cassuary, VI. 314; XVI. 796; XVII. 634—in Paraguay, 268.
 CAST, VI. 314—casts of medals, 325—of animals, vegetables, &c., 324. See Casting.
 Cast-iron, XII. 566. See Iron.
 Cast metal and cast-iron. See Iron.
 CASTAGNO (Andrea del), painter, VI. 314.
 Castalia, genus of mollusks, XV. 349.
 CASTALIUS FONS, or Castalia, VI. 314.
 CASTANEA, genus of plants, VI. 314; XI. 717.
 CASTANET, VI. 314.
 Castanha nuts, V. 192.
 CASTE, VI. 314—in India, V. 267; XI. 471; effects of there, VII. 437—in Ceylon, VI. 398—no sanction for, in the sacred books of the Hindus, XVII. 541—English society once divided into castes, VIII. 761—feudal system essentially one of caste, X. 737.
 CASTEL (Louis Bertrand), VI. 320.
 —(Mons.), his experiments in hydraulics, XII. 113, 117, 121, 122 *et seq.*
 CASTEL GRANDOLFO, Italian village, VI. 321.
 —NAUDARY, town in France, VI. 321—beet, XX. 796.
 —SARRASIN, town in France, VI. 321.
 —VETRANO, town in Sicily, VI. 321.
 CASTEL-A-MARE, city on the Gulf of Naples, VI. 320; XX. 240.
 —town in Sicily, VI. 320—gulf of, XX. 343.
 CASTELL (Dr Edmund), VI. 321—aided in the publication of Walton's Polyglot Bible, XXI. 695.
 CASTELLAN, VI. 321.
 CASTELLATION, VI. 321.
 CASTELLI (Bernardo), VI. 321.
 —(GIOVANNI BATTISTA), VI. 321.
 —(Don Benedetto), on hydrodynamics, XII. 70—on the formation of bars in rivers, XVI. 80.
 —(VALERIO), VI. 321.
 —Peruvian general, IV. 832.
 Castellina, mines of, XXI. 393.
 CASTELLIO (Sebastian), VI. 321.
 CASTELLON DE LA PLANA, VI. 321.
 CASTELLORUM OPERATIO, VI. 321.
 CASTELO BRANCO, Portuguese town, VI. 321.
 —DE VIDE, Portuguese town, VI. 321.
 CASTELVETRO (Ludovico), VI. 321.
 CASTI (Giambattista), Italian poet, VI. 321.
 CASTIGATION, VI. 322.
 CASTIGATORY, for scolds, VI. 322.
 CASTIGLIONE, numerous towns in Italy so called, VI. 322.
 —(BALDASSARE), VI. 323.
 —DELLA STIVIERE, VI. 323—battle of, III. 690.
 —(GIOVANNI BENEDETTO), VI. 323.
 —or Gabii, X. 364.
 CASTILE, Old and New, VI. 323; XX. 493—differences with Portugal, XVIII. 380,

CAS—CAT

382—Moorish kingdom of, XX. 461, 462—canal of, 491.
 Castile soap, XX. 366, 367.
 CASTILLOX, town in France, VI. 323.
 CASTING, VI. 323—history of the art of, 180, 181—of cannon, 178, 183 *et seq.*—in sand, or earth, 323; IX. 843—of specula for telescopes, XXI. 135—of types, 401, 402—with plaster of Paris, VI. 323; XV. 293; XI. 172—in the manufacture of pottery, XVIII. 441—of statues, XIX. 843.
 —a horse, &c., XXI. 559, *n.* 1.
 Casting-net, XIX. 91.
 CASTLE, VI. 326—castle-stead, 327.
 —Campbell, in Clackmannanshire, VI. 751.
 CASTLEBAR, town in Ireland, VI. 327; XIV. 372.
 CASTLEBLAYNEY, town in Ireland, VI. 327, XV. 411.
 CASTLECARY, station on the Edinburgh and Glasgow Railway, VI. 327.
 —town in Somerset, VI. 327.
 CASTLECOMER, Irish town, VI. 328—collieries of, XIII. 84—rainfall at, XII. 504.
 CASTLE-DESMOT, Irish town, VI. 328.
 CASTLE-DOUGLAS, Scotch town, VI. 328; XIII. 100.
 —and Portpatrick railway, XX. 746.
 CASTLE-ISLAND, Irish town, VI. 328.
 CASTLEREAGH, Irish town, VI. 328.
 —(Lord), his accession to power, V. 601—charge against, concerning the barter of a Bengal writership, 605—his duel with Canning, 606; VI. 176—secretary of foreign affairs, 612—consequences of his death, 637.
 Castlerising, in Norfolk, XVI. 291.
 Castleton, in Derbyshire, VII. 754, 755.
 CASTLETOWN, in the Isle of Man, VI. 328; XIV. 245, 246.
 Castnia, genus of insects, IX. 209.
 CASTOR, VI. 328—in astronomy, *ib.*—in zoology, XIV. 185.
 —cake, as manure, II. 405—analysis of, *ib.*
 —oil, VI. 328; V. 206; XVI. 495—its specific gravity, XII. 89—employed to form microscopic lenses, XIV. 769—male flower of the plant yielding, V. 128.
 —AND POLLUX, VI. 328; VIII. 36; XIX. 298—stars, X. 447—meteor, VI. 328; VIII. 588; XIV. 470.
 CASTOREUM, or Castor, VI. 328; IV. 555.
 CASTRATION, VI. 329; IX. 375—of horses, II. 339; XXI. 571—lambs, II. 349—crime of, XIV. 428. See Eunuch.
 Castrén (Alex.), on Turanian philology, XVII. 535.
 CASTRES, in France, VI. 329.
 Castri, Greek village, VII. 710.
 CASTRO, Neapolitan sea-port, VI. 329.
 —Del Rio el Real, and Urdiales, Spanish towns, VI. 329.
 —Giovanni, Nuovo, Reale, Sicilian cities, VI. 329.
 —(Isaac de). See Orobio (Baltasar).
 —Villari, town in Naples, VI. 329.
 CASTRUCCIO (Castracani), VI. 329.
 CASTRUM DOLORIS, VI. 330.
 CASUALTY, VI. 330—as applied to human actions, XIII. 262—idea of, as referable to reasonings on human character and conduct, XIX. 123.
 Casuarinaceæ, nat. order of plants, V. 208.
 Casuarinus, genus of birds, XVI. 796.
 CASUIST, VI. 330.
 CASUISTRY, VI. 330.
 CASWEEN, VI. 308.
 CAT, VI. 330; XIV. 170—its fur, X. 349—its power of resisting starvation, III. 180—worshipped by the Egyptians, VIII. 432—tailless cat, XIV. 243.
 CATS'-EYE, a gem, VI. 330; XV. 69.
 Cat-fish, XII. 309; IX. 764; XVI. 424.
 CAT-GUT, VI. 330.
 CAT-HEAD, VI. 333.
 CAT-SALT, VI. 330.
 CATA, a prefix, VI. 330.
 CATACHRESIS, VI. 330.

CAT—CAT

CATACOMB, VI. 330.
 Catadioptric light, XIII. 474—lenses, 477—glass mirror, 478—microscope, XIV. 769.
 — holophotal apparatus, XIII. 477.
 CATADROMUS, VI. 330.
 CATAFALQUE, VI. 330.
 CATAGOGIA, VI. 330.
 CATAGRAPH, VI. 330.
 Catalan forge, XII. 538, 544.
 CATALEPSY, VI. 330; XVII. 700.
 CATALOGUE, VI. 331—raisonné, *ib.*—catalogues of the fixed stars, *ib.*; IV. 80, 95, 143; III. 791—bibliographical, IV. 713, 715—for libraries, XIII. 377—of monastic libraries, 387.
 CATALONIA, VI. 331; XX. 493—vineyards of, XXI. 884.
 Catalpa syringefolia, XVII. 764.
 Catalysis, in chemistry, VI. 441.
 Catalysotype, XVII. 551.
 CATAMARAN, VI. 331; XIII. 803.
 Catamarca, in La Plata, XVII. 779.
 CATANDUANES, island, VI. 331.
 CATANIA, VI. 331; XX. 244, 255—laid waste by the eruptions of *Ætna*, II. 193—94—amber found at, 656—ancient coins of, XVI. 366.
 Catantostoma, fossil mollusks, XVII. 110.
 CATANZARO, Neapolitan city, VI. 331.
 Cataphagus, genus of insects, IX. 106.
 CATAPHRACT, VI. 331.
 CATAPULTA, VI. 332.
 CATARACT, VI. 332—of the Nile, VIII. 425, 514—in Lapland, XIII. 234. See Waterfall.
 — disease of the eye, VI. 332; XIII. 461—in domestic animals, XXI. 578.
 Catarrhina, dentition of, XVI. 456.
 CATARRH, VI. 332—in the domestic animals, XXI. 572.
 Catastomus, genus of fishes, XII. 257.
 CATASTROPHE, VI. 332.
 Cataulus, genus of mollusks, XV. 365.
 Catawba wine, XXI. 888—river, IV. 246, 247.
 CATCH, in music, VI. 332—catch-word, *ib.*
 Catch-work irrigation, XII. 614.
 Catcot (Mr), on the Deluge, VII. 720.
 CATEAU (Le), town in France, VI. 332—battle of, X. 87.
 CATECHESIS, VI. 332.
 CATECHISM, VI. 332—why not used in Apostolical times, I. 494—proper to be used now, 502—Cranmer's, VII. 483, *n.* 7.
 CATECHIST, VI. 332.
 CATECHU, VI. 332—as a dye stuff, VIII. 296—in tanning, XIII. 306.
 CATECHUMEN, VI. 333.
 CATEGORICAL, VI. 333.
 CATEGORY, VI. 333—Aristotle's categories, III. 552.
 Catelan (Abbé de), IX. 676.
 Catena (Paulus), VII. 307—his cruelties in Britain, V. 380—burnt alive, VII. 307.
 Catenania, mountains in Tuscany, XXI. 392, 393.
 CATENARIAN CURVE, VI. 333; III. 406; IX. 746; X. 505; XX. 544—James Bernoulli on, IV. 672—geometry of the, I. 876.
 CATERPILLAR, VI. 333; IX. 53, 204 *et seq.*—processionary, 213—geometrae or surveyors, 216—aquatic, 218—fungus parasitic on, V. 217.
 Catesby, his connection with the Gunpowder Plot, V. 384.
 — (Mr), on birds, XVI. 726—on the turtle, XIX. 19—on the guana, 33—green lizard, 35—on a species of rattlesnake, 69.
 CATHARINA SANTA, VI. 333. See Santa Catharina.
 CATHARINE, VI. 333—knights of St Catharine of Mount Sinai, *ib.*—fraternity of St Catharine at Sienna, *ib.*
 — de Medicis, Davila's character of, VII. 666.
 Cathartes, genus of birds, XVI. 739.
 CATHARTICS, VI. 333.
 Cathcart (General), XIII. 35.

CAT—CAT

Cathcart (Lord), on national defences, XXI. 702.
 CATHEDRA, VI. 333.
 CATHEDRAL, VI. 333—Gothic, III. 447, 456, 480—architecture of, 409, 516, 517—libraries, XIII. 394—society in cathedral cities, X. 694—erection of, by free-masons, XIV. 337.
 Catherine, consort of Henry the Eighth, VIII. 697, 698, 701.
 — I., empress of Russia, VI. 333—reign of, XIX. 481—accessions of territory under, 494.
 — II., empress of Russia, VI. 334—reign of, XIX. 484—science encouraged by, II. 65.
 — PARR, VI. 333. See Parr, Catharine.
 — (St), order of, VI. 337.
 Catherineburg, meteorological observations at, XIV. 686.
 Catherine-wheel window, IV. 512.
 Catherinewood, his illustrations of the monuments of Central America, III. 502—on the origin of these remains, *ib.*
 CATHETER, VI. 337; VII. 601; XX. 831.
 CATHETUS, VI. 337—of incidence—of reflection—of obligation—in architecture, *ib.*; III. 508.
 CATHOLIC, VI. 337—church—king, *ib.*—meaning of the term, I. 484, *n.*
 — Association, in Ireland, XII. 501; V. 642, 647, 653.
 CATILINA (Lucius Sergius), VI. 337, 717—his conspiracy, XIX. 323.
 Catkin, in botany, V. 115.
 Catla, genus of fishes, XII. 257.
 Catlow (Maria E.), her work on insects, IX. 23.
 CATMANDOO, city in Hindustan, VI. 337; XIII. 76; XVI. 144, 148.
 CATO, the Censor, VI. 337; XIX. 314—his mission to Carthage, VI. 300—on irrigation, XII. 621—his dislike to the medical profession, XIV. 453.
 — OF UTICA, VI. 338; XIX. 323, 326; XXI. 498—his speech on Catiline's conspiracy, XX. 675.
 — (Dionysius), IV. 435, *n.* 1.
 — Street conspiracy, V. 628.
 Catopra, genus of fishes, XII. 277.
 Catoprion, genus of fishes, XII. 247.
 Catopterus, genus of fossil fishes, XII. 334.
 CATOPTICS, VI. 339; XIII. 451; XVI. 552—catoptric lights for lighthouses, XIII. 468, 471—catoptric micrometers, XIV. 749.
 CATOPTROMANCY, VI. 339.
 Catoptrophorus, genus of birds, XVI. 805.
 Catopygus, fossil echinoidea, XVII. 99, 100.
 Catoxantha, genus of insects, IX. 105.
 CATRINE, in Ayrshire, VI. 339—weaving factory at, VII. 450.
 CATROU (François), VI. 339.
 Cats (Jacob), Dutch poet, XI. 591.
 CATSKILL, town in New York, VI. 340.
 — mountains, VI. 340; XVI. 213.
 Catsup, IX. 765.
 CATTARO, in Dalmatia, VI. 340.
 CATTEGAT, VI. 340; IV. 402, 403.
 CATTI, an ancient German nation, VI. 340; XIII. 111; X. 576.
 Cattle, breeds of, II. 340—breeding and management of, 343—dairy breeds, 342; VII. 621—grazing of, II. 325—fattening of, 344—mode of housing 345—diseases of, XXI. 554—of Argyleshire, III. 527—England, VIII. 723—America, II. 714—Arabia, III. 347—New South Wales, IV. 280—Derbyshire, VII. 755—Devonshire, 764—Dumbar-tonshire, VIII. 236—Dumfriesshire, 237—Durham, 267—Lincolnshire, XIII. 491—Lombardy, 649—Egypt, VIII. 432—Herefordshire, II. 341; XI. 349—Galway, XIII. 100—Lanarkshire, 175—cattle-trade of Ireland, XII. 519—history of, XIV. 214—wild cattle at Chillingham Castle, XVI. 300—of Norway, 325—fed on fish, XIII. 241—in the different counties of Scotland, XIX. 798—Sweden, XX. 861—Switzerland, 889—Sussex, 839—Wurtemberg, XXI. 933.

CAT—CAV

Cattle murrain, II. 49.
 CATTOLICA, town in Sicily, VI. 340.
 CATULLUS (C. Valerius), Roman poet, VI. 340—poetry of, XVIII. 104.
 Caturus, genus of fossil fishes, XII. 336; XVII. 126.
 Catwater, V. 307, 308; XVIII. 17.
 CATZ (Jacob), VI. 340.
 CAUBUL, VI. 340; II. 201 *et seq.* See Cabul.
 Cauca, in New Granada, X. 797.
 Caucasian race of man, II. 775; XI. 541—languages, IX. 390; XIII. 199, 215—aborigines of America compared with, II. 678—its subdivisions, 775.
 CAUCASUS, VI. 340; IX. 382; III. 734; XVII. 420, 597; XIX. 514, 551; heights of, XVII. 643.
 Cauchy (Augustin Louis), I. 920—his vast mathematical labours, *ib.*—his modification of Fresnel's theory of reflection, *ib.*—on the dispersion of light, and its non-dispersion in free space, 921—his theory of waves, XII. 74—on equations, XI. 290, 306—on optics, XVI. 546, 686.
 Caudal vertebrae, III. 76, 84—in fishes, 89.
 CAUDEBEC, French town, VI. 343.
 CAUDETE, Spanish town, VI. 343.
 Caudex, in tree-ferns, V. 143.
 Caudine Forks, disaster to the Roman army at, XIX. 304.
 CAUFIRISTAN, in Asia, VI. 343.
 CAUKING, or caulking of ships, VI. 343; XX. 118, 189, 190.
 CAULABAGH, town in Hindustan, VI. 343.
 Caulaincourt (Duke of Vicenza), X. 160, 167, 168, 172.
 Caulfield (Mr), on salmon fisheries in Ireland, IX. 625.
 Cauliculus, in architecture, III. 508.
 CAULIFLOWER, VI. 344; IX. 760—culture of, XI. 737.
 Cauquenas, hot springs of, VI. 543.
 CAURSINES, Italian usurers, VI. 344.
 Caus (Salomon de), his steam apparatus, XX. 574.
 Causalty, or causality, XIV. 599, 600—law of, as applied to human actions, XIII. 262—phrenological faculty of, XVII. 533.
 Causans (Chevalier de), his fancied discovery of the quadrature of the circle, XX. 522.
 Causation, XIV. 600 and *n.* 4, 601—Malebranche on, I. 78—Hume's theory of, 211; XIX. 710—Glanvil on, X. 643—Aristotle on, III. 540—Dr T. Brown on, V. 683.
 CAUSE, VI. 344.
 — and effect, Dr Brown on the relation of, V. 683—charge against Sir J. Leslie for his opinions on, XIII. 345—Kant on, 47.
 CAUSEWAY, VI. 344.
 CAUSSADE, town in France, VI. 344.
 CAUSSIN (Nicholas), VI. 344.
 CAUSTIC CURVE, VI. 344; XVI. 571, 576, 578.
 CAUSTICS, VI. 344.
 CAUTERY, VI. 344; XX. 815 *et seq.*
 CAUTIONER, in Scots law, VI. 344.
 CAUTIOUSNESS, XVII. 562.
 Cauvery, river, VI. 243, 356; XXI. 18, 328, 329.
 CAVA, a town of Naples, VI. 344.
 Cavaignac, General, X. 238.
 — (Godfrey), X. 205, 208.
 CAVAILLON, French town, VI. 344.
 CAVALCANTI (Guido), VI. 344.
 CAVALIER, VI. 344—English cavaliers of the seventeenth century, V. 401.
 — in fortification, VI. 344; IX. 821.
 CAVALIERI (Bonaventura), VI. 344—his mathematical attainments and discoveries, I. 552—55; IX. 671—on the concentration of cold by reflection, VII. 99, *n.* 2; I. 762.
 CAVALLINI (Pietro), VI. 344.
 CAVALLO (Tiberius), VI. 344—Volta's letters to, I. 963—his experiments in aeronautics, II. 170—on electricity, VIII. 567, 602—his self-charging electrical jar, 613—on the electrophorus,

CAV—CAY

607—his atmospherical collector of electricity, 608—his mode of using the electrical doubler, 615—his electrical multiplier, 616—his electroscope, *ib.*—on the air-pump, XVIII. 41—on magnetism, XIV. 22—magnetism of brass, 26—his micrometer, 759.
 Cavallo, Turkish town, XIII. 55.
 CAVALLUCI (Antonio), painter, VI. 347.
 CAVALRY, VI. 347, 602—Roman, III. 633—British, 665—Austrian, 645—Prussian, 646—Russian, 648—French, 640; X. 270—Spanish, III. 643—Turkish, 658. See Army.
 CAVAN, in Ireland, VI. 347.
 CAVANILLES (Antonio Jose), VI. 349.
 CAVE, VI. 350; XVII. 601—artificial caves, III. 435—of Baumanns, IV. 514—temperature of, VI. 778—in Hungary, XII. 10—Kentucky, XIII. 69—Indiana, XII. 375—Honduras, XI. 609—caves with fossil remains, XVII. 639; in Britain, *ib.*; XV. 215—in Skye, XX. 317—Sutherland, 841—Tipperary, XXI. 286. See Grotto.
 — (EDWARD), printer, VI. 350—literary employment given by, to Dr Johnson, XII. 795.
 — (Dr WILLIAM), VI. 350—on miracles in the fourth century, II. 663.
 CAVEDONE (Jacopo), VI. 350.
 Cavendish (Charles, Lord), on the depression of mercury in capillary tubes, XII. 91.
 — (HENRY), VI. 350—biographical notice of, I. 929—his wonderful range of scientific knowledge, *ib.*—lightness of hydrogen determined by, II. 170—on the composition of the atmosphere, IV. 180—his claims to the discovery of the composition of water, I. 929, 930; VIII. 594—on chromatics, VI. 645—his chemical discoveries, I. 929—his experiments on latent and specific heat, 930—singular personal characteristics of, 931—his philosophical character, *ib.*—on electricity, 987, 988; VIII. 530, 533—his experiment on the density of the earth, I. 834, 835—on the torpedo, VIII. 574; his artificial torpedo, I. 988—on electricity as a chemical agent, VIII. 594—on the electrical shock, 602—on the Leyden jar, 613—thermometers constructed by, XXI. 222—experiments on airs, 776.
 — (Lord John), V. 500 *et seq.*
 — (MARGARET), duchess of Newcastle, VI. 355.
 — (THOMAS), of Suffolk, VI. 355—his visit to the Ladrone islands, XVIII. 269.
 — (Sir WILLIAM), VI. 355.
 — (WILLIAM), first duke of Devonshire, VI. 356.
 — tobacco, XXI. 294.
 CAVERY, or Cauvery, river, VI. 356, 243. See Cauvery.
 Cavetto, in architecture, III. 468, 508.
 Cavia, genus of mammalia, XIV. 188.
 CAVIARE, VI. 356—from the sturgeon of the Ooral, XIX. 551.
 Cavitaires, entozoa, XXI. 981.
 CAVITE, town in the island of Luzon, VI. 356.
 Cavoleau (M.), on the variety of French wines, XXI. 882, 883.
 Cavy, in zoology, XIV. 189—cape-cavy, 199—Patagonian, cranium and teeth of, XVI. 453.
 Cawley, his steam-engine, I. 770; XX. 575.
 CAWNPORE, in Hindustan, VI. 356—outbreak of the Sepoy mutiny at, XVI. 305—relief of by General Havelock, 306—atrocities committed at, 305, 306.
 CAXAMARCA, city of Peru, VI. 357.
 CAXTON (William), VI. 357; XVIII. 534—works printed by, 535—his types, XXI. 401—his second-hand translations of the classics, IV. 710.
 CAYENNE, in French Guiana, VI. 357; XI. 84.
 — island, VI. 357; XI. 84.
 — pepper, VI. 357; V. 201; XVII. 404; XXI. 161—adulterations of, IX. 770. See Capsicum.

CAY—CEL

- Cayla (Madame du), X. 181, 188.
 Cayley (Sir George), his flying apparatus, IX. 748.
 CAYLUS (Comte de), VI. 357—on encaustic painting, VIII. 654.
 Caymanas, or Cayman isles, XII. 682.
 Caymans, XIX. 23.
 CAYSTER, or Caystrus, VI. 358.
 CAZALLA DE LA SIERRA, Spanish town, VI. 358.
 Cazim (Mahommed), his description of Assam, III. 763.
 CAZIQUE, or Cacique, VI. 358.
 CAZORLA, town in Spain, VI. 358.
 CEBES, of Thebes, VI. 358.
 Cebelyris, genus of birds, XVI. 751.
 Cebrio, genus of insects, IX. 106.
 Cebionites, tribe of insects, IX. 106.
 Cebus, genus of mammalia, XIV. 143—dentition of, XVI. 455, 456.
 Cecidomyia, genus of insects, IX. 226.
 CECIL (ROBERT), VI. 359.
 — (WILLIAM), Lord Burleigh, VI. 358; VIII. 711.
 CECILIA (St), VI. 359.
 Cecropium, in Athens, IV. 168.
 CECROPS, VI. 360; IV. 159, 192.
 CEDAR, VI. 360; V. 209—as timber, XXI. 275, 278—red, XIII. 19—Jamaica, XII. 681—specific gravity of the wood, 89—used in the houses of Nineveh, XVI. 272—Deodar cedar, XVII. 760.
 — Chilean, VI. 549.
 — of Lebanon, V. 209; XVII. 190, 757, 760.
 Cederborg, Swedish novelist, XIX. 702.
 Cederström (Frederic), XX. 857.
 Cedrelaceæ, nat. order of plants, V. 187.
 CEDREUS (Georgius), VI. 360—on religious theatrical exhibitions, VIII. 143.
 Ceely (Robert), proves the identity of cow-pox and small-pox, XXI. 502.
 CEFALU, in Sicily, VI. 360.
 CEHEGIN, Spanish town, VI. 360.
 CEILING, in architecture, VI. 360; III. 488—lathing and plastering of a, V. 742—in ship-building, XX. 187.
 CEIMELIA, VI. 360.
 CEIMELIOPHYLAX, VI. 360.
 Ceiriog, river in Denbighshire, VII. 735.
 Celafu, city in Sicily, XX. 243.
 CELANO, lake, VI. 360; X. 317; XX. 238.
 CELARENT, in logic, VI. 360.
 Celastraceæ, nat. order of plants, V. 189—region of, 227; XVII. 627.
 CELASTRUS, genus of plants, VI. 360; V. 189.
 CELATURE, VI. 360.
 Celaya, city in Mexico, XIV. 724.
 CELBRIDGE, town in Kildare, VI. 360.
 CELEBES, VI. 360—the Bugis of, III. 749—language of, XIII. 208, 218—reptiles, XIX. 24, 53, 54.
 CELERES, Roman soldiers, VI. 361; XIX. 296.
 Celeriac, culture of, XI. 744.
 CELERTY, VI. 361.
 CELERY, VI. 361—culture of, XI. 744—blanching of, V. 67.
 Celestial mountains, XXI. 227.
 CELESTINE, the name of five popes, VI. 361. See Pope.
 — mineral, XV. 95.
 CELESTINS, a religious order, VI. 361.
 CELEUSMA, VI. 361.
 CELIBACY, VI. 362—few inclined to, XIV. 441—of the Catholic clergy, XVIII. 336; policy of, I. 527, n. 2.
 CELIBATE, VI. 362; XVIII. 336.
 CELIDOGRAFIA, VI. 362.
 CELL, VI. 362—cells of plants, V. 65, 66, 67—of bee-combs, IV. 577, 579—cell-formation, II. 784—their influence in formation of tissues, ib., 785—relation between nucleated cells and corpuscula, 785—cell tissues, XVII. 650.
 Cella, VI. 362—a fountain in Aragon, III. 393—in architecture, 508.
 CELLAR, VI. 362—cold of, VII. 100—cellar dwellings, XVIII. 196.
 CELLAREN, VI. 362.
 CELLARIUS (Christopher), VI. 363.
 Celle, town in Hanover, XXI. 969.

CEL—CEN

- CELLINI (Benvenuto), VI. 363; XIX. 863.
 Cellular tissue, of plants, V. 65, 66—physiology of, 67.
 — of the human body, II. 786; XVII. 650—of brutes, III. 171; IX. 758.
 Cellulares, or cellular plants, V. 65, 178, 179, 217.
 Cellulose, IX. 755; V. 65, 72; II. 379; XIX. 611.
 Celonites, genus of insects, IX. 196.
 Celsius, his centesimal thermometer, I. 759; IV. 457—on the diminution of the Baltic, 403—on the elevation of the Swedish coasts, XX. 860.
 CELSUS (Aurelius Cornelius), VI. 363—his anatomical knowledge, II. 751—his knowledge of medicine, XIV. 454; of surgery, XX. 812—on the qualities necessary in a surgeon, 821—on insanity, XIV. 527.
 CELTÆ, or Celts, VI. 363; II. 776; V. 372 et seq.; IX. 387; XIII. 212; X. 727—Celtic language, V. 374; XIII. 200, 212; VIII. 797; IX. 393—philology, XVII. 530, 538—Celtic origin of the Irish, XII. 462—Celtic academy, II. 70—Celtic ring-money, XVI. 352, n. 1—barrows, XXI. 879.
 CELTES, VI. 367; IV. 512.
 CELTIBERIA, in Spain, VI. 367—people of, XX. 457.
 CEMENT, VI. 367—tissue in the formation of the teeth, XVI. 407, 410—iron cement, X. 418, n.; XIII. 721; V. 361.
 — for building, VI. 368; V. 742; XX. 713, 714, 735—different kinds of, 714, 715—Parker's Roman, V. 742—Portland, ib.—plastering with, 744—decay of, on walls, ib.—Pozzolana, XVIII. 698; XX. 714.
 CEMENTATION, VI. 368; XVIII. 443, 444.
 CEMETERY, VI. 368, 22; V. 773—cemeteries in London, XIII. 678—in Glasgow, X. 656—influence of, on health, XIV. 444—situation and management of, XIX. 620—of Sidon, XX. 269—English, at Leghorn, XIII. 317.
 CENCI (Beatrice di), VI. 368.
 CENEDA, town in Lombardy, VI. 369—mineral springs of, XIII. 644.
 CENEGILL, VI. 369.
 Cenia, genus of mollusks, XV. 370.
 CENOBIITE, or Cœnobite, VI. 369; VII. 53.
 CENOTAPH, VI. 369.
 CENSER, VI. 369.
 CENSIO, VI. 369. See Censor.
 CENSITUS, VI. 369. See Capite Censl.
 CENSOR (Roman), VI. 369; XIX. 301—in China, VI. 563.
 CENSORINUS, VI. 370.
 CENSORS of Books, VI. 370; IV. 712; XIII. 357.
 CENSURE, VI. 370.
 CENSUS, VI. 370—of the population of Britain, XVIII. 342—of America, 340, 341. See Population.
 CENT, VI. 371—a copper coin, ib.
 CENTALLO, town of Piedmont, VI. 371.
 CENTAUR, constellation, VI. 371; IV. 80.
 CENTAURI, or Centaurs, fabulous beings, VI. 371—in heraldry, XI. 334.
 Centaurus, genus of fishes, XII. 314, 207.
 CENTENARIUS, VI. 372.
 Centenes, genus of mammalia, XIV. 152.
 Centenius Penula, defeat of, VI. 298.
 Center. See Centre.
 CENTESIMÆ USURÆ, VI. 372.
 CENTESIMATION, VI. 372.
 Centetes, dentition of, XVI. 452.
 CENTIGRADE THERMOMETER, VI. 372; IV. 457; XXI. 222.
 CENTILOQUIUM, VI. 372.
 Centipedes, XV. 747, 749.
 CENTLIVRE (Susanna), VI. 372; VIII. 165.
 CENTO, VI. 372.
 — Italian town, VI. 372.
 CENTORBI, VI. 372.
 CENTRAL AMERICA, VI. 372. See America, Guatemala, &c.
 — FORCES, VI. 372; VIII. 358.
 Centrarchus, genus of fishes, XII. 277.
 CENTRE, VI. 372; V. 748—of effort or re-

CEN—CER

- sistance, in ships, XX. 12, 159—that used for the bridge of Orleans, 759.
 CENTRE OF GRAVITY, VI. 385; XX. 146, 147 et seq., 546—in a ship, 16—progressive motion of, XIX. 439.
 — OF MOTION, VI. 385.
 — of a circle, X. 513.
 — of percussion, XIX. 434—of gyration, 435—of spontaneous rotation, 439.
 — (Canal du), X. 244.
 CENTRIFUGAL FORCE, VI. 385; XIV. 409—couples, 409.
 — inflorescence, V. 115.
 — process, in sugar-making, XX. 795.
 — pump, XII. 179.
 Centrina, genus of fishes, XII. 325.
 Centrinus, genus of insects, IX. 140.
 CENTRIPETAL FORCE, VI. 385—inverse problem of, VIII. 361.
 — inflorescence, V. 114.
 Centris, genus of insects, IX. 200.
 Centriscus, genus of fishes, XII. 305, 209; XVII. 117.
 Centrodus, genus of fossil fishes, XVII. 125.
 Centrolinead (the), XVII. 446.
 Centrolophus, genus of fishes, XII. 298.
 Centronoti, tribe of fishes, XII. 297.
 Centrophorus, genus of fishes, XII. 325.
 Centropomus, genus of fishes, XII. 275.
 Centropistis, genus of fishes, XII. 276.
 Centropus, genus of birds, XVI. 778.
 Centroscyllium, genus of fishes, XII. 325.
 Centrotus, genus of insects, IX. 170.
 Centrurophis, genus of fishes, XII. 232.
 Centumalus (Fulvius), defeated by Hannibal, VI. 298.
 CENTUMVIRI, VI. 385.
 Centuria, division of a county, XII. 9.
 CENTURION, VI. 386; III. 631.
 CENTURY, VI. 386.
 — a division of the Roman people, VI. 386; XIX. 297 et seq., 316.
 CEORLES, VI. 386.
 CEOS, now Zea, island, VI. 386; VII. 607—coins of, XVI. 374.
 CEPHALIS, genus of plants, VI. 386; V. 196.
 Cephalacanthus, genus of fishes, XII. 282.
 Cephalaspidei, family of fossil fishes, XII. 338.
 Cephalaspis, genus of fossil fishes, XII. 339; XVII. 121.
 Cephalia, genus of insects, IX. 251.
 CEPHALIC, VI. 386.
 CEPHALONIA, VI. 386; XII. 452—insurrection at, in 1848 and 1849, XII. 456—coins of, XVI. 372—cotton, XII. 445—wines of, XXI. 886.
 — pine, XII. 453, n. 1.
 Cephalopoda, class of mollusks, XV. 390, 322—fossil, XVII. 111—extinct genera of, 115—bed of, XV. 207.
 Cephaloptera, genus of fishes, XII. 328.
 Cephalopteridæ, family of fishes, XII. 326, 328.
 Cephalopterus, genus of birds, XVI. 749.
 Cephalotes, genus of mammalia, XIV. 148.
 Cephaluna, genus of entozoa, XXI. 982.
 Cephas, genus of insects, IX. 184.
 Cephren, Egyptian king, VI. 526.
 Cephus, genus of birds, XVI. 810.
 Cepola, genus of fishes, XII. 303.
 CERAM, island, VI. 386; XV. 404.
 Cerambycini, tribe of insects, IX. 144.
 Cerambyx, genus of insects, IX. 145.
 Ceramiaceæ, sub-order of plants, V. 218.
 Ceramicus, and Ceramic edifices, in ancient Athens, IV. 161—outer, 170—Agora, 162.
 Ceramius, genus of insects, IX. 197.
 Cerasine, V. 73; IX. 756.
 — mineral, XV. 105.
 Cerastes, genus of serpents, XIX. 71—power of abstinence, II. 52—statement by Bruce regarding, XIX. 45.
 Ceratias, genus of fishes, XII. 312.
 Ceratina, genus of insects, IX. 199.
 CERATION, VI. 386.
 Ceratites, fossil mollusks, XVII. 113.
 Ceratodus, genus of fossil fishes, XII. 341.

CER—CER

- Ceratodidæ, XXI. 991.
 CERATONIA, genus of plants, VI. 386; V. 190.
 Ceratophris, genus of reptiles, XIX. 77.
 Ceratophyllaceæ, nat. order of plants, V. 206.
 Ceratopogon, genus of insects, IX. 225.
 Ceratoptera, genus of fishes, XII. 328.
 CERBERA, genus of plants, VI. 386.
 CERBERUS, VI. 386—constellation, IV. 80.
 Cercaria, genus of animalcules, III. 203; XXI. 976, 980.
 Cercocebus, genus of mammalia, XIV. 140.
 Cercomya, fossil mollusks, XVII. 108.
 Cercopis, genus of insects, IX. 170.
 Cercopithecus, genus of mammalia, XIV. 139—fossil, XVII. 167.
 Cercus, genus of insects, IX. 114.
 CERDONIANS, ancient heretics, VI. 387.
 CEREALIA, a festival of Ceres, VI. 387.
 — esculent seeds of grasses, VI. 387; XVII. 630—produce of, in Ireland in 1855, XII. 517—used as food, IX. 758.
 CEREBELLUM, VI. 387; II. 818; III. 51, 52—weight of, 52—function of, XVII. 674—of brutes, III. 103. See Brain.
 Cerebratules, genus of entozoa, XXI. 982.
 Cerebro-spinal diseases, XVII. 700, 702.
 CEREBRUM, VI. 387; II. 818; XVII. 668. See Brain.
 CEREMONIAL, VI. 387—laws of the Mosaic dispensation, I. 469.
 CEREMONIES, master of the, VI. 387.
 CEREMONY, VI. 387.
 Cereopsis, genus of birds, XVI. 816.
 CERES, goddess, VI. 387; IV. 67; VII. 373—priests of, 616—mysteries of, 629; XV. 753.
 — one of the planets, VI. 387—its discovery, III. 808; IV. 67.
 CERET, French town, VI. 387.
 Cerexochus, Egyptian deity, XI. 386.
 Ceria, genus of insects, IX. 228.
 Cerianthidæ, polypes, XXI. 1004.
 CERIGNOLA, Neapolitan city, VI. 387.
 CERIGO, island, VI. 387; XII. 454.
 Cerigotto, island, XII. 454.
 Cerin, mineral, XV. 90.
 CERINTHIANS, heretics, VI. 387.
 Cerinthus, Gnostic, X. 637; XVIII. 265.
 Cerite, mineral, XV. 91.
 Cerithiada, family of mollusks, XV. 383—fossil, XVII. 110.
 Cerithium, genus of mollusks, XV. 383.
 CERIUM, a metal, VI. 388, 488; XV. 66.
 CERNE-ABBAS, town in Dorset, VI. 388—abbey at, VIII. 112.
 Cerocoma, genus of insects, IX. 134.
 CEROMA, VI. 388.
 Ceromya, fossil mollusks, XVII. 108.
 Cerones, two Caledonian tribes, VI. 74.
 Ceropales, genus of insects, IX. 195.
 Cerophytum, genus of insects, IX. 106.
 CEROTYLON ANDICOLA, genus of palms, VI. 388.
 CERRETO, town of Naples, VI. 388.
 Cerro di Pasco, town in Peru, XVII. 331, 474—silver mines of, XV. 235; XVII. 471.
 CERTALDO, town in Tuscany, VI. 388.
 Certallum, genus of insects, IX. 145.
 Certhia, genus of birds, XVI. 768.
 CERTIORARI, in law, VI. 388.
 Cerulin, VIII. 301.
 CERUMEN, VI. 388.
 CERUSE, or white-lead, VI. 388—manufacture of, XIII. 301.
 Cerussite, mineral, XV. 105.
 CERVANTES (Saavedra Miguel de), VI. 388—his Don Quixote, I. 96; VI. 619; XIX. 285—wounded at Lepanto, XII. 456, n. 1—dramas of, XVIII. 114—his novels, XIX. 285.
 Cervantite, mineral, XV. 113.
 Cervaro, river, XX. 238.
 CERVERA, Spanish town, VI. 389.
 CERVIA, town in the Papal States, VI. 389.
 Cervical vertebra, III. 5, 75, 84.
 — muscles, III. 38.
 Cervidæ, fossil, XVII. 170.
 Cervus, genus of mammalia, XIV. 205—fossil species, XVII. 170.

CER—CHÆ

Cerylon, genus of insects, IX. 142.
 CESARE, a kind of syllogism, VI. 389.
 CESARI (Giuseppe), VI. 389.
 CESAROTTI (Melchiorre), VI. 389.
 CESENA, town in the Papal States, VI. 389.
 Cessart (M. de), his plan for Cherbourg breakwater, V. 303—his plans for the Pont du Louvre, XII. 580.
 Cess-pools, building of, V. 735.
 CESSIO BONORUM, VI. 389; IV. 415.
 Cestidae, zoophytes, XXI. 1001.
 Cestoidea, zoophytes, XXI. 979, 976, 977, 978.
 Cestraciodontei, family of fossil fishes, XII. 340.
 Cestracion, genus of fishes, XII. 322, 324; XVII. 117—jaw and teeth of, XVI. 424.
 Cestraciontidae, family of fishes, XII. 324; XVII. 116, 117—dental characters of, XVI. 424.
 Cestræus, genus of fishes, XII. 291.
 CESTUS, VI. 390.
 — a boxer's glove, VI. 390, 58; V. 252.
 Cetacea, XIV. 216, 237—II. 774, 775; XVII. 633, 635—their bones, III. 76—organs of smell, 94—eyes, 95—ears, 98 *et seq.*—vocal organs, 101—nervous system, 103—teeth, 105—stomach, 109—odontology of, XVI. 442, 443, 444, 445—of America, II. 713—oils produced by, XVI. 493. See Whales.
 Cetiosaurus, fossil reptiles, XVII. 153.
 Cetonia, genus of insects, IX. 127.
 Cetoniidae, family of insects, IX. 127.
 Cetopsis, genus of fishes, XII. 261.
 Cetosia, genus of insects, IX. 207.
 Cetotoliths, XVII. 165.
 CETTE, French town, VI. 390.
 Cetti (Francesco), on birds, XVI. 729.
 CETUS, constellation, VI. 390; IV. 80.
 Ceulen (Ludolph Van), II. 560; X. 504; XX. 522.
 CEUTA, fortress on the coast of Fez, VI. 390—taken from the Moors, XVIII. 382.
 — promontory, XV. 594.
 Ceutorhynchus, genus of insects, IX. 140.
 CEVA, VI. 390.
 CEVENNES, mountains, VI. 390; IX. 383.
 CEYLON, VI. 390; XXI. 351—castes in, VI. 315—cultivation of cinnamon in, 727—missions established in, XV. 271—Buddhism in, X. 724—pearl divers of, VIII. 56—pearls, XVII. 356, 357—use of betel in, IV. 686—flora of, V. 228; XVII. 628—height of mountains, 646—reptiles, XIX. 53, 54, 65—varieties of rice, 157—reasons for supposing it to have been Eastern Tarshish, XXI. 27, 28—cultivation of tea in, 81—weights and measures, 810.
 Ceyx, genus of birds, XVI. 773.
 Chabannes (Marquis de), his hot-water apparatus, XIX. 614.
 Chabasie, optical properties of, XVI. 542.
 Chabasite, mineral, XV. 76.
 CHABLIS, town in France, VI. 401.
 CHABRIAS, Athenian general, VI. 401.
 Chabrier (J.), his work on the flight of insects, IX. 15.
 Chaca, genus of fishes, XII. 263.
 Chaco (Gran), plain in La Plata, XVII. 777.
 Chadwick (Mr.), on the allowance to the poor, XVIII. 306, n. 1—on the rate of wages in Lancashire, XXI. 680.
 Chænichthys, genus of fishes, XII. 306, 307.
 Chæremon's lost work on hieroglyphics, XI. 411.
 Chærephon, XX. 391.
 CHÆRONEIA, in Boeotia, VI. 401—battle of, XIII. 765; consequences of, XXI. 179.
 Chæropotamus, fossil mammal, XVII. 165.
 Chærops, genus of fishes, XII. 267.
 Chætites, fossil corals, XVII. 97.
 Chætodon, genus of fishes, XII. 301, 302.
 Chætodontidae, or Chætodonts, family of fishes, XII. 299, 302—fossil, 344.

CHA—CHA

Chætopterus, genus of annelides, XI. 300.
 — genus of fishes, XII. 288.
 CHAFERY, VI. 401.
 Chaff, as manure, II. 406.
 Chaff-cutters, II. 283.
 CHAFFINCH, VI. 401; XVI. 761.
 Chafin (Rev. William), on fox hounds, XII. 43.
 CHAGRES, river and town, VI. 401; II. 712; XVII. 226.
 Chahorra, volcano, VI. 165.
 Chailletiacæ, nat. order of plants, V. 189.
 CHAIN, VI. 401—use of, in surveying, *ib.*
 — BRIDGES, VI. 401. See Iron Bridges.
 — book, in surveying, XXI. 348.
 — cables, XX. 23.
 — PUMP, VI. 401; XII. 183.
 — rigging, XX. 23.
 — SHOT, VI. 401.
 Chair, for railways, XVIII. 756, 757, 759.
 CHAISE, VI. 401.
 Chaka, Kafir chief, XIII. 36; XV. 803.
 Chakoor, or fire-eater, bird, XVI. 143.
 Chalaza, in botany, V. 133, 139.
 CHALAZÆ, VI. 401.
 CHALCEDON, in Bithynia, VI. 401.
 — council of, VIII. 474.
 Chalcedony. See Calcedony.
 Chalceus, genus of fishes, XII. 247.
 Chalcides, genus of reptiles, XIX. 39.
 Chalcidæ, tribe of insects, IX. 192.
 CHALCIDIUS, philosopher, VI. 401.
 Chalcinus, genus of fishes, XII. 247.
 CHALCIS, VI. 401; XVI. 129.
 — genus of insects, IX. 192.
 Chalco, in Mexico, XIV. 722, 723.
 CHALCOCONDYLES, Byzantine historian, VI. 401.
 Chalcolite, mineral, XV. 104.
 Chalcophyllite, mineral, XV. 103.
 Chalcopryite, XV. 116.
 Chalcotrichite, mineral, XV. 112.
 Chaldaic language, in the Scriptures, XIX. 833, 834—Targums, 838; XXI. 23.
 CHALDEA, VI. 401; IV. 345—mother-country of diviners, VIII. 54—monarchy, XV. 412.
 Chaldeans—their astronomy, III. 782—day, VI. 75—their dial, VII. 772—mythology, XV. 763—sculpture, XIX. 846.
 CHALDEE LANGUAGE, VI. 401; XIII. 200, 209—alphabet, II. 614—portions of the Bible in the, IV. 694.
 — PARAPHRASE, VI. 401.
 CHALDRON, a dry measure, VI. 401.
 CHALET, VI. 401.
 Chaleurs, Bay of, XVI. 162.
 CHALICE, VI. 401.
 Chalilite, mineral, XV. 76.
 CHALK, VI. 401; XV. 92, 146, 210, 211—black, VI. 402; XV. 83—its resistance to crushing, XX. 718—specific gravity of, XII. 88—composed chiefly of animalcules, XVII. 588—as a manure, II. 303—drawing in, VIII. 171; engraving of chalk drawings, 804—French and red, VI. 402—chalk-marl, XV. 210—chalk flints in Scotland, XIX. 793.
 — FORMATION, VI. 402; XV. 210—fishes of, XII. 349, 350 *et seq.*; XVII. 640—fossil sponges of, 93—Bryozoa of, 98—in Russia, XIX. 518; Spain, XX. 485.
 — STONES, VI. 402.
 CHALLENGE, VI. 402; VIII. 230—of jurymen, XIII. 24.
 Challis (Prof.), his results of theory respecting waves, XII. 74—his researches in hydrodynamics, 76—on Laplace and Poisson's theories of capillary attraction, 101—his search for the planet Neptune, III. 817; IV. 93; I. 830 and *n.*—on light, XVI. 547.
 CHALMERS (Alex.), biographer, VI. 402.
 — (GEORGE), VI. 402, 191—on the agriculture of Scotland, II. 251—on the Mosquito territory, XV. 664—his estimate of the corn raised and consumed in the United Kingdom, VII. 395—on the history of Caledonia, XIX. 741 *et seq.*
 — (Dr THOMAS), VI. 403—his venera-

CHA—CHA

tion for Prof. Robison, I. 873, n. 1—on the wonders displayed by the microscope, III. 197—on Butler's Analogy, VI. 33—on moral philosophy, XV. 535, 538—his exertions for church extension, XVIII. 493—veto proposed by, 494—his Bridgewater treatise, V. 364—on the character of Dr Andrew Thomson, XXI. 233.
 CHALONER (Sir Thomas), VI. 407.
 — (Sir THOMAS, the younger), VI. 407.
 — (Thomas), his alum-works, II. 637.
 CHALONS-SUR-MARNE, VI. 407.
 CHALONS-SUR-SAONE, VI. 407.
 CHALUS, town in France, VI. 407.
 Chalybæus, genus of birds, XVI. 748.
 CHALYBEATE, VI. 408—waters, XV. 38, 39—in Clare, VI. 753.
 Chalybite, XV. 99.
 CHAM, of Tartary, VI. 408.
 Chama, genus of mollusks, XV. 349, 347—fossil, XVII. 107.
 CHAMADE, in war, VI. 408.
 Chamelauciaceæ, nat. order of plants, V. 192.
 Chamæleonidae, family of reptiles, XIX. 37. See Cameleon.
 CHAMAS (St), town of France, VI. 408.
 Chamavi, tribe of Franks, VII. 306.
 CHAMBER, VI. 408.
 CHAMBERLAIN, VI. 408—Lord, XI. 775—vice, *ib.*
 CHAMBERLATNE (Edward), VI. 408.
 — (JOHN), VI. 408.
 CHAMBERS (David), VI. 408.
 — (Dr), on corpulence, VII. 414.
 — (EPHRAIM), VI. 408.
 — (Sir WILLIAM), VI. 408—on Greek and Roman architecture, III. 448, 456—his low estimate of the principles of Vitruvius, 451—his merits as an architect, 455—his depreciation of Greek architecture, 456—on Chinese gardens, VI. 592.
 Chamberlin, wine, XXI. 883.
 CHAMBERY, in Italy, VI. 408; XIX. 633, 640.
 CHAMBORD, chateau in France, VI. 409.
 CHAMELEON, VI. 409. See Cameleon.
 Chamfer, in architecture, III. 508.
 CHAMFRAIN, VI. 409.
 Chamidæ, family of mollusks, XV. 349.
 CHAMIER (Daniel), VI. 409.
 CHAMISSO (Adelbert von), VI. 409; XVI. 123—on the salpian mollusks, XV. 335.
 CHAMOIS, VI. 409; XIV. 211—among the Alps, II. 626—hunters of Glarus, X. 644—confined to the Alps, XVII. 630.
 — leather, XIII. 305, 210.
 CHAMOMILE, VI. 409; V. 197; XI. 745—used in dyeing, VIII. 297—oil of, XVI. 496.
 CHAMOND (St), town in France, VI. 409.
 Chamostrea, genus of mollusks, XV. 350.
 CHAMOUNY, or Chamonix, VI. 409—valley of, XV. 509; glaciers descending into, *ib.*
 CHAMPAGNE, in France, VI. 409; X. 277.
 — (PHILIPPE DE), painter, VI. 409.
 — wine, XXI. 883, 890—alcohol in, 889, 890.
 CHAMPAIN, in heraldry, VI. 409; XI. 325.
 Champaubert, battle of, X. 167.
 CHAMPION, VI. 409.
 — of the king, VI. 409.
 — his attempt on the life of Louis Philippe, X. 213.
 CHAMPLAIN, lake, VI. 409; XVI. 214; XXI. 550—military operations near, in 1813, V. 617—canals and railways connected with, VI. 155; XXI. 550—geology of, XVI. 215.
 Champneuf (F. G.), his work on insects, IX. 12.
 CHAMPOLLION (Jean François le Jeune), VI. 410; XXI. 964—on Egyptian architecture, III. 435, 436—his method of interpreting ancient Egyptian characters, XI. 377—his merits and discoveries, 408—his system of hieroglyphics, VIII. 196—his birthplace, IX. 546—his Grammar and Dictionary of

CHA—CHA

Hieroglyphics, XI. 431—on the Egyptian "Book of the Dead," XVII. 263.
 Champre, on the chemical effects of voltaic electricity, XXI. 628.
 Chañarcillo, mines of, VI. 548.
 CHANCAY, town of Peru, VI. 410.
 CHANCE, VI. 410; XVIII. 591—history of the doctrine of, I. 819—its chief applications, *ib.* See Probability.
 — (Messrs), their glass establishment near Birmingham, IV. 732; X. 664.
 CHANCEL, VI. 410.
 CHANCELLOR, VI. 410—in Ireland and Scotland, 411—of a cathedral, *ib.*—of the Duchy of Lancaster, *ib.*—of the exchequer, 412—of the order of the garter, *ib.*—of a university, *ib.*; XXI. 446—of Oxford, 456—Cambridge, 462—London University, 466—St Andrews, 475—Marischal College, Aberdeen, 481—Edinburgh, 483—Dublin, 489.
 CHANCERY, VI. 412, 411—inns of, XII. 384.
 CHANDERNAGORE, French settlement in Bengal, VI. 412; XI. 484.
 CHANDLER (Richard), D.D., VI. 413—his account of Ephesus, IX. 269.
 — (Dr SAMUEL), VI. 413.
 Chandos (Sir John), VI. 621.
 CHANG CHAU, Chinese town, VI. 413.
 Channel islands, XII. 730, 731; VIII. 792 vessels belonging to, 742—cattle of, II. 342; VII. 621—consumption of tea in, XXI. 91.
 — of rivers, XIX. 200, 201.
 CHANNING (William Ellery), VI. 413—on the credibility of the Scriptures, XIX. 832.
 Channock Chase, XX. 529.
 Channomurena, genus of fishes, XII. 232.
 Chanos, genus of fishes, XII. 254.
 CHANT, VI. 415.
 CHANTIBAN, town of Siam, VI. 415.
 CHANTILLY, in France, VI. 415.
 CHANTREY (Sir Francis), VI. 415—character of his sculpture, XIX. 868.
 CHANTRY, VI. 415.
 Chaones, in Epirus, IX. 277.
 CHAOS, VI. 415.
 Chapala, lake, XIV. 715.
 CHAPEAU, in heraldry, VI. 416, 205; XI. 336.
 CHAPEL, VI. 416—knights of the, *ib.*—chapels of ease, in the Scotch kirk, XVIII. 493.
 — EN-LA-FRITH, in Derbyshire, VI. 416.
 — HILL, in America, VI. 416.
 CHAPELAIN (Jean), VI. 416.
 Chapelle (C. E. L.), I. 108 and *n.* 1.
 — ardente, VI. 330; XIV. 339.
 — or stove-grate, XVIII. 78.
 CHAPERON, VI. 416, 205.
 Chapingo, in Mexico, XIV. 723.
 CHAPLAIN, VI. 416—chaplain's of the pope, *ib.*—pension to widows of regimental chaplains, VII. 203—naval, XVI. 105; pay of, 110, 114—of ships, XX. 28.
 CHAPLET, VI. 416.
 — water-raising machine, XII. 183.
 CHAPMAN (George), VI. 416.
 — (William), on dry rot, VIII. 207, 209, 211, 212—on the durability and strength of ropes, XIX. 402, 403—his rope-machinery, 407, 408.
 — (Mr), his estimate of the value of the woollen and worsted manufactures in Great Britain, XXI. 918.
 — origin of the name, VI. 600.
 CHAPPE (Clande), VI. 416.
 — D'AUTEROCHÉ (Jean), VI. 416.
 CHAPTAL (Jean Antoine Claude), VI. 416—his process for making alum, II. 635, 641—on dyeing nankeen yellow, VIII. 300—his mode of whitening the leaves of books, IV. 771—on the price of wheat in France, VII. 403.
 CHAPTER, VI. 417.
 CHAPU, Chinese town, VI. 417.
 Chapuis (M. F.), his work on insects, IX. 24.
 Char, fish. See Charr.
 Characeæ, nat. order of plants, V. 217—reproductive organs of, 148.

CHA—CHA

Characinidae, family of fishes, XII. 245.
 CHARACTER, VI. 417—literal characters, *ib.*—particular—universal, *ib.*—of abbreviation, 419; II. 21—numeral, VI. 418—Chinese characters, 572—essential, in natural history, V. 175.
 —in poetry, VI. 420—difficulty of estimating national, IV. 210—the phrenological art of reading character, XVII. 566.
 Charadrius, genus of birds, XVI. 797.
 CHARADE, VI. 420.
 Charax, genus of fishes, XII. 287.
 CHARCOAL, VI. 421, 471—electricity developed in the combustion of, VIII. 567—its use in filters, IX. 580, 581—its power of sweetening tainted meat, 767—its use with the blow-pipe, IV. 791—for gunpowder, XI. 153; proportions of, in gunpowder, 151—used in iron manufacture, XII. 539, 542—as fuel, X. 318; for laboratories, 360—fusion of, by voltaic electricity, XXI. 626. See Carbon.
 CHARD, VI. 421.
 CHARDIN (Sir John), traveller, VI. 421.
 CHARENTE, in France, VI. 421.
 CHARENTE-INFERIEURE, VI. 422.
 CHARENTON-LE-PONT, town in France, VI. 422.
 CHARES, of Rhodes, statuary, VI. 422—colossus of Rhodes executed by, XIX. 858.
 CHARGE, in heraldry, VI. 422; XI. 327, 330.
 Charger, XI. 656.
 Charicles, XX. 399.
 Charing-Cross, London, XIII. 659, 660.
 CHARLOT, VI. 422—triumphal, *ib.*
 —races, X. 398.
 CHARISIUS, surname of Jupiter, VI. 423.
 CHARISTIA, Roman festival, VI. 423.
 CHARISTICARIES, VI. 423.
 Charitable Corporation, V. 457.
 —Establishments in England, VIII. 748. See London, Dublin, &c.
 CHARITÉ (La), town of France, VI. 423.
 CHARITÉS, the three Graces, VI. 423; X. 741.
 CHARITON, Greek writer, VI. 423.
 CHARITY, VI. 423; XVII. 502, *n.*—establishments for purposes of, in England, VIII. 748. See Alms, Mendicants, Mendicancy.
 —(Brothers and Sisters of), VI. 423.
 CHARKOV, or Kharkov, in Russia, VI. 423; XIII. 76.
 CHARLATAN, VI. 423.
 CHARLEMAGNE, VI. 423—reign of, X. 7—dates of his coronation and death, VI. 667—his proceedings in Germany, X. 578—academy founded by, II. 61—Lombardy conquered by, XIII. 643; XII. 643—his books against image-worship, 356—the Jews protected by, 777—iron crown of, X. 136 and *n.* 1—his encouragement of learning, XIII. 388; V. 14; XIV. 457; XXI. 444; and of art, XVII. 60—homiliarium of, XI. 606—his wars with the Saxons, X. 7, 8, 9; XIX. 685—his invasion of Spain, XX. 462.
 Charlemont (Lord), his account of Hume in Paris, XII. 4.
 —(Earl of), XII. 496.
 CHARLEROI, in Belgium, VI. 423; XXI. 717, 718.
 CHARLES MARTEL, VI. 424; X. 6.
 —le Gros, VI. 424.
 —the Simple, X. 11.
 —the Fair, X. 15.
 —the Prudent, X. 20.
 —I. of England, VI. 424—his matrimonial visit to Spain, while Prince of Wales, V. 387—his reign, 389—his character, *ib.*—his wars with the parliament, 402 *et seq.*—throws himself on the Scottish army at Newark, 408—sur-rendered to the English, *ib.*—his trial, 411—execution, 412—influence of the civil war of 1640 on the intellectual character of the nation, I. 48—archery in his reign, III. 425—his fondness for chess, VI. 538—his visits to Edinburgh,

CHA—CHA

VIII. 392—his Irish policy, XII. 480—his navy, XVI. 92; XX. 130—a patron of Shakspeare, 73—an accomplished prince, *ib.*, *n.*—his encouragement of the theatre, XXI. 169—foreign weavers exiled by, 780.
 Charles I. of Spain (V. of Germany), his reign, XX. 468—his abdication and character, 469. See Charles V.
 —II. of England, VI. 424—his expedition to Scotland, V. 413—his coronation at Scone, 414—his invasion of England, and defeat at Worcester, 415—escape to France, *ib.*—his restoration, 420—history of his reign, *ib.*—his death and character, 433—Robert Barclay's dedication to, IV. 442—his treatment of Colonel Blood, 789—his regulations as to the coinage, VII. 76, 78—act regulating the exportation of corn, 377—state of the drama, VIII. 161; its gross immorality, 162—Edinburgh in the reign of, 392—duelling, 231—his policy towards Ireland, XII. 486—his navy, XVI. 93; XX. 130—specimen of newspapers in the reign of, XVI. 183.
 —II. of Navarre, XX. 464.
 —II. of Spain, XX. 470.
 —III. of Spain, XX. 471.
 —IV. of Spain, XX. 471.
 —V., emperor of Germany, VI. 424—his expedition against Algiers, II. 568—dominions of, IV. 302—his wars in the Netherlands, III. 636; and policy towards that country, XI. 562—his wars in Italy, XII. 651—Robertson's History of, XIX. 231; Stirling's, *ib.*, *n.* 2—his Spanish reign, XX. 468—abdication and character, 469—his patronage of Titian, XXI. 291.
 —V., king of France, X. 20—his library, V. 12—Paris improved by, XVII. 278.
 —VI. of France, X. 20.
 —VII. of France, X. 23—established the first standing army, III. 636.
 —VIII. of France, X. 28—his army, III. 636—his invasion of Italy, XII. 651.
 —IX. of France, X. 32.
 —IX. of Sweden, XX. 847.
 —X. of France, X. 189—departure from France, 202—death, 212—character, 202—law for his banishment, and that of his descendants and relations, 204—state of Paris under, XVII. 279.
 —X. of Sweden, XX. 851.
 —XI. of Sweden, XX. 852.
 —XII. of Sweden, VI. 424; VII. 741—his reign, XX. 852—his army, III. 637—his designs against George I., V. 455—his fondness for chess, VI. 538—wars with the Russians, XIX. 477 *et seq.*
 —XIII. of Sweden, XX. 859.
 —XIV. and XV., kings of Sweden, XX. 860.
 —(Duke of Burgundy), XI. 561—his invasion of Switzerland, XX. 885.
 —Edward Stuart, his expedition to Scotland, V. 460—escape to France, 461—his visit to Dumfries, VIII. 239—Edinburgh taken by, 393; V. 460.
 —Gustavus, king of Sweden, VII. 740.
 —(Mons.), his hydrogen gas balloons, II. 175, 176—his observation of the thermometer and barometer, VI. 780.
 —of Anjou, king of Sicily, X. 13; XX. 258.
 —of Bourbon, king of Sicily, XX. 260, 264.
 CHARLES'S WAIN, seven stars in Ursa Major, VI. 425.
 CHARLESTON, in South Carolina, VI. 425, 247.
 CHARLESTOWN, in Massachusetts, VI. 425.
 —in Fife, mining operations at, IV. 756.
 CHARLETON (Walter), VI. 425—his improvements in anatomy, II. 762.
 CHARLEVILLE, in France, VI. 425.
 —in Ireland, VI. 425

CHA—CHA

CHARLEVOIX (Pierre François Xavier de), Jesuit missionary, VI. 425.
 Charlotte (Princess), grant to her and her husband, V. 621—her death, 623—church services in Scotland on the death of, XXI. 232.
 CHARLOTTENBURG, in Brandenburg, VI. 426.
 CHARLOTTESVILLE, in Virginia, VI. 426.
 CHARLOTTE-TOWN, in Prince Edward's island, VI. 426; XVIII. 578.
 —in Dominica, XIX. 423.
 CHARM, VI. 426—modern Egyptian charms, VIII. 447.
 CHARNEL, or Charnel-house, VI. 426.
 Charnock, on the history of marine architecture, XX. 117, 123—on the ship Henri Grace à Dieu, 125—his account of a ship built by James IV. of Scotland, 126—on the dimensions of French ships, 133.
 CHAROLLES, town in France, VI. 426.
 CHARON, VI. 426; XX. 785.
 CHARONDAS, VI. 426.
 Charons, a Hindu sect, XI. 91, 92.
 CHARPENTIER (François), VI. 426.
 —(Toussaint de), his works on insects, IX. 13, 18.
 —(M.), on the descent of glaciers, X. 637, 638.
 CHARR, VI. 426; XII. 241, 439—angling for, III. 158.
 Charrhæ, battle of, XIX. 325. See Carrhæ.
 CHARRON (Pierre), VI. 426—relations between him and Montaigne, I. 52, 53—on the power of custom, XV. 543.
 Chartnas, American people, II. 677.
 CHART, VI. 426; XVI. 3, 27—plane—Mercator's, *ib.*; X. 496—globular, VI. 426—hydrographic—selenographic—topographic, *ib.*—wreck chart, XIII. 446—of the variation of the needle, XIV. 49; I. 990—recent improvements in, XX. 27.
 CHARTA, VI. 426.
 CHARTER, MAGNA CHARTA, VI. 426—granted by King John, VIII. 677.
 —PARTY, VI. 428—charters of community, 736.
 Charterhouse, London, VI. 428; XIII. 667.
 CHARTISTS, VI. 428; IV. 671—insurrection of the, V. 667—their monster petition, *ib.*—influence of Cobbett's Weekly Register on, XVI. 189.
 CHARTOPHYLAX, VI. 428.
 CHARTRES, in France, VI. 428.
 CHARTREUSE, LA GRANDE, VI. 428; XII. 627.
 CHARTULARY, VI. 428.
 CHARYBDIS, VI. 429; XX. 244.
 CHASE, or Chace, VI. 429; XX. 210, *n.* See Shooting.
 Chase-mortise in carpentry, V. 748.
 Chasewater steam-engine, XX. 575.
 Chasidæans, Jews, III. 776.
 Chasing, or en chasing, VIII. 654.
 Chasmodes, genus of fishes, XII. 309.
 Chasmodia, genus of insects, IX. 123.
 Chassé (General), his defence of the citadel of Antwerp in 1830, IV. 606; and in 1832, 609; X. 208; IX. 826.
 Chasseloup on fortification, IX. 833.
 Chassot (Carl de Florencourt), on life assurance, XII. 400.
 CHASTELLET (Madame du), VI. 429—notice of her writings, I. 185–86—on the force of moving bodies, 655, 656, *n.* 1—her connection with Voltaire, XXI. 658.
 CHASTITY, VI. 429—duty of, XV. 568. See Rape.
 Chat Moss, XIII. 177—reclamation of, II. 361—railway across, XVIII. 760.
 Chateau Margaux, wine, XXI. 883.
 CHATEAU-GONTIER, in France, VI. 430.
 Chateau-Neuf, disaster at, from lightning, VIII. 586.
 CHATEAU-THIERRY, in France, VI. 430.
 CHATEAUBRIAND (François Auguste, Vicomte de), VI. 429; X. 184, 185, 191, 193, 194 *et seq.*—his dismissal from office in 1824, 187—on the scenery of Greece, XI. 13—passage in the Mer-

CHA—CHE

cure written by, XVI. 197—his novels, XIX. 289.
 CHATEAUBRIANT, French town, VI. 429.
 CHATEAUDUN, town in France, VI. 430.
 CHATEAURoux, in France, VI. 430.
 CHATELLERAULT, in France, VI. 430.
 Châtelet (Madame du). See Chastellet.
 CHATHAM, VI. 430; XIII. 65—dockyard at, VIII. 81—population of, XIII. 67—convict labour at, XVIII. 583.
 —ISLANDS, VI. 430; IV. 268.
 —(William, Earl of). See Pitt.
 —(J., second Earl of), his conduct of the Walcheren expedition, V. 607.
 Chati, feline animal, XIV. 170.
 CHATILLON-SUR-SEINE, VI. 430—congress of, X. 166.
 Chatùessus, genus of fishes, XII. 237.
 CHATRE (La), VI. 430.
 CHATSWORTH, seat of the Duke of Devonshire, in Derby, VI. 430; VII. 756—founded by Sir William Cavendish, VI. 356.
 CHATTAOOCHIEE, North American river, VI. 431.
 Châtelaine, his engravings, VIII. 808.
 CHATTELS, VI. 431.
 Chatterers, birds, XVI. 850.
 CHATTERTON (Thomas), poet, VI. 431—Bryant's work on his Rowley's Poems, V. 705—place where he pretended they were found, 370—his poetry, XVIII. 124—publication of Rowley's Poems, XXI. 410—Warton on his Poems, 736.
 CHAUCER (Geoffrey), VI. 432—compared with Barbour, IV. 436—his description of an archer, III. 427—obscenity of his Canterbury Tales, VI. 610—his language, VIII. 795; understood by the descendants of an English colony in Wexford, XXI. 847—on May-day, XIV. 367—his intimacy with Gower, X. 739—his acquaintance with Petrarca and Boccaccio, XVII. 500—poetry of, XVIII. 120.
 CHAUD-MELLE, in Scots law, VI. 434.
 CHAUDES AIGUES, in France, VI. 434.
 Chaudoir (Max. de), his entomological works, IX. 19.
 Chaullac (Guy de), his medical writings, XIV. 458; XX. 817.
 Chaullieu, poetry of, XVIII. 117.
 Chaulliodes, genus of insects, IX. 179.
 Chaulliodus, genus of fishes, XII. 247.
 Chaulnes (Duke de), on the colours of concave mirrors, XVI. 619.
 CHAUMONT, town in France, VI. 435; XIV. 312.
 —gypsum quarries of, XV. 165.
 Chaunax, genus of fishes, XII. 312.
 Chauna, genus of birds, XVI. 807.
 CHAUNT, town in France, VI. 435.
 Chausse-trapes, IX. 799.
 Chaussier (M.), on the skin, II. 834—on medical jurisprudence, XIV. 424.
 Chauvelin (Mons.), ambassador, V. 546; X. 76; XXI. 11.
 Chauvet, blind organist, IV. 781.
 CHAUVIN (Stephen), VI. 435.
 CHAUX-DE-FOND (La), Swiss town, VI. 435.
 CHAVES, Portuguese town, VI. 435.
 Chaworth (Mr), killed in a duel with Lord Byron in 1765, VIII. 232.
 CHAZELLES (Jean Mathieu de), VI. 435.
 CHEADLE, town in Staffordshire, VI. 435.
 CHECKY, in heraldry, VI. 435; XI. 328, 326.
 Cheddar-cheese, XX. 410—method of making, VII. 625; introduced into Scotland, XXI. 864.
 CHEDUBA, island in the Bay of Bengal, VI. 435.
 Chedufau (M.), his discoveries in Arabia, III. 355.
 Cheek-bone, human, III. 22.
 Cheeronjee oil, XVI. 496.
 CHEESE, VI. 435, 523—dairies, VII. 624—different kinds of British, 625—imports of, VIII. 734—of rein-deer's milk, XIII. 239—Cheshire, VI. 529—green-cheese of Glarus, X. 644—Gloucester, 680—

CHE—CHE

Gouda, 730—Dunlop, IV. 333—Stilton, XIII. 320—Parmesan, 651—Gruyère, X. 304, 305—occasionally poisonous, IX. 761—in Holland, XI. 582; quantity exported from, 585—inferiority of Irish, XII. 518—Cheddar (see Cheddar).

Cheese mite, III. 388.

Chehalis, river, XXI. 766.

Chellinus, genus of fishes, XII. 267.

Cheilio, genus of fishes, XII. 267.

Cheilobranchius, genus of fishes, XII. 229.

Cheilodactylus, genus of fishes, XII. 278.

Cheilodipterus, genus of fishes, XII. 275.

Cheilostomata, polypes, XXI. 1002.

Cheilotrema, genus of fishes, XII. 286.

Cheiracanthus, genus of fossil fishes, XII. 334; XVII. 123.

Cheirolepis, genus of fossil fishes, XII. 334; XVII. 123.

Cheiromys, genus of mammalia, XIV. 178—dentition of, XVI. 455.

Cheironectes, genus of fishes, XII. 206, 310, 311.

Cheiroptera, mammalia, XIV. 146—odontology of, XVI. 452.

CHEIROTHERIUM, fossil animal, VI. 436; XVII. 138—foot-prints of, 140.

CHEKE (Sir John), VI. 435.

CHE-KIANG, in China, VI. 436.

CHELIDONIAS, VI. 436.

Chelifer, genus of arachnides, III. 386.

Chelmon, genus of fishes, XII. 300, 302.

CHELMSFORD, town in Essex, VI. 436.

Chelone, fossil, XVII. 153.

Chelonia, genus of insects, IX. 214.

— genus of reptiles, XIX. 16—number known, 51—chief works on, 21, n. 2—fossil, XVII. 153—geographical distribution of, 154.

Chelonichthys, genus of fossil fishes, XII. 337.

Chelonus, genus of insects, IX. 188.

Chelostoma, genus of insects, IX. 199.

CHELSEA, VI. 436—suspension-bridge, XIII. 676—its porcelain, XVIII. 437, 438—botanic garden, XX. 334 and n.—hospital, XIII. 672.

CHELTENHAM, in Gloucestershire, VI. 436; X. 632—bridge, XII. 606—mineral waters of, XV. 39—inferior oolite near, 207.

Chelydra, fossil chelonian, XVII. 153.

Chelyosoma, genus of mollusks, XV. 334.

Chelys, genus of reptiles, XIX. 21.

CHEMISE, in fortification, VI. 436.

CHEMISTRY, VI. 437—progress of, I. 800, 801—vague and extravagant views of the first experimenters in, 569—its beneficial application to pharmacy, 570—discoveries of Van Helmont and Roger Bacon, lb.—chemical constitution of animal bodies, II. 778 *et seq.*—Bayen's analyses, IV. 523—use of the blow-pipe in, 791—Mr Cavendish's influence in promoting discovery in, VI. 351; I. 929—his experiments on factitious air, VI. 351; and on air, 352, 353—crystallization, VII. 545—knowledge of, in Egypt, VIII. 442—application of electricity to, 530; XXI. 637—chemical changes produced by electricity on inorganic bodies, VIII. 590—electricity of chemical action, 566—filtration in, IX. 582—furnaces used in, X. 357—heat from chemical action, XI. 275—chemical effects of light, XIII. 459; I. 921—chemical equivalents, 938—chemical theory of galvanism, 964, 968, 978—heat considered as a branch of, 925—Dalton's atomic theory, 935, 936—its importance to the progress of chemistry, 937, see Atomic Theory—use of chemical analysis in medicine, XIV. 464—chemical properties of minerals, XV. 60—influence of their chemical composition on their external characters, 62—chemical reaction of minerals, 63—chemical rocks, 129, 142—influence of magnetism on chemical action, XIV. 41—chemical effects of the solar spectrum, XVI. 594—foundation of modern, XIV. 460—physiological, XVII. 654—chemical and electrical forces identical, I. 978—chemical theory

CHE—CHE

of combination and oxidation, 932—evidence in cases of poisoning, XVIII. 132—antidotes to poison, 134—chemical effects of voltaic electricity, XXI. 628; of thermo-electricity, 652—chemical application of electricity, 637. See Cold, Heat, Electro-chemistry, Oxygen, &c., Dalton, Davy, &c.

CHEMISTRY, ORGANIC, VI. 501—of vegetation, V. 94—chemical changes during germination, 165—of tea, XXI. 82. See Agricultural Chemistry.

Chemistry, XVIII. 554.

CHEMNITZ (Martin), VI. 525.

— a town of Saxony, VI. 525—its manufactures, XIX. 684.

CHEMOSH, VI. 525.

CHEMOSIS, inflammation of the eyes, VI. 525.

Chenalopex, genus of birds, XVI. 816.

CHENAUB, or Chenab, river in the Punjab, VI. 525; XVIII. 687, 688.

CHENEIR (Marie Joseph de), VI. 526.

Chenendopora, fossil sponges, XVII. 93.

Chennium, genus of insects, IX. 153.

Chenopodiaceæ, nat. order of plants, V. 203.

Chenu (J. C.), his work on insects, IX. 19.

CHEOPS, Egyptian king, VI. 526—pyramid of, III. 437; VIII. 454.

Chepman (Walter), printer, XVIII. 538.

CHEPSTOW, in Monmouthshire, VI. 526; XV. 497, 498; XXI. 948—castle, XV. 499—iron bridge at, XII. 601.

Chequers, origin of, as a sign, III. 324.

CHE, in France, VI. 526.

CHERASCO, town in Piedmont, VI. 526.

CHERBOURG, in France, VI. 526—breakwater of, V. 302; XI. 219—dock-yard established by Bonaparte, V. 305; X. 243.

CHERIBON, town in Java, VI. 527.

Cherokees, II. 680, 692; X. 564, 565.

Cheronæa. See Chæronæa.

Cherons, XI. 466.

Cheroots, XXI. 295.

CHEERRY, VI. 527; V. 191; XVII. 763—in Hertfordshire, XI. 359—specific gravity of the wood, XII. 89—culture and varieties of, XI. 712—cherry-house, 729—introduced into Europe by Lucullus, XIII. 715—gum of the cherry-tree, XI. 93.

— Laurel, V. 191.

— red, colour in dyeing, VIII. 291.

CHERSO, island, VI. 527.

CHERSON, VI. 527. See Kherson.

CHERSONESUS, VI. 527.

— ancient city, VII. 505.

— Cimbrica, VI. 723.

— Taurica, VII. 527. See Crimea.

Chert, mineral, XV. 69, 147.

CHELTSEY, town in Surrey, VI. 527.

CHERUB, VI. 527.

CHERUBINI (M. L. C. Z. Salvador), VI. 527; XV. 700—on fifths in music, 724—on the fugue, 735, 736.

CHERUSCI, ancient German tribe, VI. 528; X. 572, 576.

Chervil, plant, XI. 745.

Cherwell, river, XVII. 36.

CHESAPEAKE BAY, VI. 528; XIV. 330, 331.

CHESELDEN (William), VI. 528; XII. 26; XX. 819—his anatomical labours, II. 764, 766—on the vision of a patient couched for cataract, XIV. 558, n. 1.

CESHAM, town in Bucks, VI. 528.

CESHIRE, VI. 528—breed of pigs, II. 355—cheese, VII. 625—constabulary act of 1829, XVIII. 199—salt mines in, XV. 246; XIX. 582 *et seq.*—population and value of property, VIII. 754.

CHESNE (André du), VI. 529.

Chesney (Colonel), his expedition up the Euphrates, IX. 376—on artillery, III. 683, 684.

CHESS, VI. 530—Kempelen's automaton chess-player, III. 138.

Chest. See Thorax.

— (water in the). See Hydrothorax.

CHESTER, VI. 538—mysteries performed at, VIII. 143—arms of, XI. 323—Chester and Birkenhead Railway, IV. 723.

CHE—CHI

CHESTERFIELD, VI. 539—canal, VII. 754.

— (Earl of), VI. 539. See Stanhope.

CHESTER-LE-STREET, VI. 539; VIII. 267.

CHESTNUT, VI. 539; XVI. 395—culture of the, XI. 717; in France, X. 247, 248.

— water, V. 192—horse, 186; XVII. 759, 762—sweet, 758—chestnut-timber, XXI. 274, 278.

Chethams' library, Manchester, XIII. 406.

Chetopoda, genus of annelides, XI. 291, n. 1.

Chetore, in Hindustan, VI. 601.

CHEVAL-DE-FRISE, VI. 539; IX. 798.

CHEVALIER, VI. 539.

— (M.), on compound achromatic lenses, XIV. 777.

CHEVERON, in heraldry, VI. 539; XI. 328.

CHEVIOT Hills, VI. 539; XVI. 299—sheep, II. 346, 351; north of Scotland chiefly stocked with Cheviots, 350; in Sutherland, XX. 842—height of, XVII. 643—geology of, XIX. 790, 454.

CHEVREAU (Urban), VI. 539—his table-talk, II. 738.

Chevreul (M.), his analysis of fat, II. 788; VI. 170—Iodine discovered by, in the crust of the crustacea, VII. 537—on dyestuffs, VIII. 287 *et seq.*—on saponification, XX. 367—on zoophytes, XXI. 977, n. 1.

— on the arrangement of coloured flowers, V. 152.

Chevrolat (A.), his works on insects, IX. 19.

Chevy-chase, VI. 429, 539; XX. 212.

Cheyletus, genus of arachnides, III. 388.

CHEYNE (Dr George), VI. 539.

Chey Sing, XI. 495.

CHIABRERA (Gabriele), Italian poet, VI. 539; X. 453—merits of his poetry, XVIII. 112.

Chiaje (Delle), on zoophytes, XXI. 983, 985.

Chiampa, VII. 48.

CHIAPA, or Chiapas, Mexican state, VI. 539; XIV. 726, 718.

— DE LOS INDOS, town in Mexico, VI. 539.

CHIARAMONTE, town in Sicily, VI. 540.

CHIARI, town in Lombardy, VI. 540.

— (GIUSEPPE), VI. 540.

CHIAROSCURO, VI. 540, 758—printing in, 273—engraving, VIII. 799, 800—drawing, 173—in wood-engraving, XXI. 903.

Chiaustolite, mineral, XV. 86.

CHIAUSI, VI. 540.

CHIAVARI, Italian town, VI. 540.

CHIAVENNA, town in Lombardy, VI. 540.

CHICAGO, city of Illinois, VI. 540; XII. 362, 363.

CHICANE, or Chicanery, VI. 540.

Chicha, Peruvian liquor, XVII. 472.

Chichimecas, Mexican people, XIV. 698.

Chichen, ruins of, II. 697.

CHICHESTER, town in Sussex, VI. 540; XX. 838, 839.

Chichimeks, II. 683.

Chickara, in zoology, XIV. 210.

CHICKEN-POX, VI. 540; XXI. 501.

Chickweed, V. 184, 116.

CHICLANA, town of Spain, VI. 541.

CHICORY, or Succory, VI. 540; II. 329, 335; V. 150, 197; IX. 761—adulterations of, 769—culture of, XI. 744—laws concerning the sale of, II. 154.

CHIEF, VI. 541—in heraldry, lb.; XI. 327.

CHIEFTAIN, VI. 541.

CHIERI, Italian town, VI. 541.

CHIETI, city of Naples, VI. 541.

CHIGI (Fabio), Pope Alexander VII., VI. 541.

CHIHUAHUA, state and town in Mexico, VI. 541; XIV. 727, 718.

CHILBLAIN, VI. 541.

Child (Sir Josiah), on interest, XII. 429—on political economy, XVIII. 215, 216.

Child-murder, XIV. 428.

Childebert, X. 4 *et seq.*

Childeric, X. 2.

CHILDERMAS-DAY, VI. 541.

Childers, race-horse, XI. 635, 639, 643.

Childhood, XIV. 425—beauty of, IV. 544.

CHI—CHI

Children, less able to want food than adults, III. 180—exposing of, IX. 457—causes of mortality among, XIX. 607—importance of warm clothing to, 611—enactments regulating their labour in factories, XXI. 790.

— (Mr), his galvanic battery, XXI. 611; and its results, 626.

Childrenite, mineral, XV. 94.

Childs (Col.), his survey of the proposed ship-canal through Nicaragua, XVI. 245, 246.

CHILE, VI. 541; II. 689, 704—climate, 673—ancient civilization of, 690—native tribes of, 691; their probable descent, 695—revolution in, 701—consuls and vice-consuls in, VII. 337—mines of, XV. 235—plants, XVII. 629—Chilian Andes, 592—height of mountains in, 644, 645—production of the precious metals in, XVIII. 461, 462; XV. 248—serpents, XIX. 54—weights and measures of, XXI. 810—volcanoes, 603—map of, VI. Plate.

Chileno-Patagonians, IX. 348.

Chili pine. See Araucaria.

— nettle order of plants, V. 192.

CHILIAD, VI. 554.

CHILIAGON, in geometry, VI. 554.

CHILKA, lake in Hindustan, VI. 554.

Chilkeah, XIII. 59.

Chill, rheumatic affection in animals, XXI. 557.

CHILLAMBARAM PAGODA, VI. 554.

CHILLIANWALLA, in Hindustan, VI. 554—battle of, XVIII. 693.

CHILLICOTHE, town in Ohio, VI. 554; XVI. 490.

Chillies, V. 201.

Chillingham Castle, wild cattle at, XVI. 300.

CHILLINGWORTH (William), VI. 554.

Chilmark limestone, as a building stone, XX. 712.

CHILO, one of the seven sages of Greece, VI. 555.

CHILOE, island, VI. 555, 544, 546, 547; XVII. 334.

Chilognatha, order of myriapods, XV. 747.

Chilomycterus, genus of fishes, XII. 314.

Chilonyceris, teeth of, XVI. 452.

Chilopoda, order of myriapods, XV. 748.

Chiloscyllium, genus of fishes, XII. 323.

Chilperic, X. 4.

CHILTERN HUNDREDS, VI. 555; V. 722.

— Hills, V. 721; XVII. 36.

CHIMERA, VI. 555—genus of fishes, XII. 319—fossil, 342.

Chimæridæ, family of fishes, XII. 318.

CHIMBORAZO, VI. 555; II. 669; XXI. 693—Humboldt's barometrical measurement of, IV. 467—height of, VIII. 386; XVII. 644.

CHIME, VI. 555—chimes of clocks, VII. 22.

Chimenti (Jacopo), his binocular pictures, XX. 684.

Chimera, genus of fossil fishes, XII. 340.

Chimerical figures, in heraldry, XI. 334.

Chimilpopoca, Mexican king, XIV. 700.

CHIMNEY, VI. 555; III. 488—unknown to the Romans, 473; VI. 555—invention of, 457—of furnaces, X. 354, 355—draught in, 353, 354—glass chimneys for gas-burners, 426—nature of the draught in, XVIII. 77—tall chimneys for abating the smoke nuisance, XX. 359—cure of smoke in, 352. See Furnace, Smoke, Stoves, &c.

— sweepers, law of apprenticeship to, XIV. 349—diseases of, 443.

Chimney-pieces, building of, V. 740.

Chimpanzee, XIV. 137; XVII. 631—dentition of, XVI. 456, 457.

CHINA, VI. 557; III. 736; XVII. 610—breed of swine, II. 355—Peruvian civilization probably derived from, 687. 688—government, lb.—agriculture, lb.—mode of disposing of their dead, lb.—human sacrifices, lb.—architecture, lb.; III. 401, 438—rafts, II. 688—early history of, III. 742; VII. 717—conquered by Zinghis Khan, III. 745—visits of

CHI—CHI

missionaries to, 753—trade and manufactures, 756, 757—large bells in, IV. 629—trade in bird's nests, 727—trade at Canton, VI. 199—trade with Cochin China, VII. 48—cotton manufacture, 439—silk, VIII. 276; IX. 213—silk-worm, ib.—trade with India, XI. 459; XVIII. 472; Japan, XII. 695, 696; Java, 706; IV. 497; Russia, XIX. 551; Siam, XX. 234; Singapore, 307—war with Britain in 1840, V. 668; VI. 596—missions established in, XV. 271—monarchy of, 412—river system of, XVII. 607—emigration from, VIII. 651—coins of, XVI. 391—imports of the precious metals into, XVIII. 467, 468—trade of the United Kingdom causes an unusual increase of exports of the precious metals to, 471—trade of the United States with, ib.—opium trade, 472—cultivation of rice, XIX. 156—use of silk in, XX. 277; quantity exported, ib.; manufacture of, 287—analysis of the soil of the tea-lands, XXI. 84—account of the cultivation and manufacture of tea in, ib. *et seq.*—tea-plant indigenous to, 88—effect of the recent disturbed relations with, on the tea market, 91—weights and measures, 810. See Chinese.

China blue, VIII. 319.

—grass, manufactures in, XIII. 495—fibre of, XXI. 782—tree producing, V. 206.

—INK, VI. 599.

—ROOT, VI. 599.

—stone, VII. 408.

—WARE, VI. 599; XVIII. 431, 434, 435—crackle china, 435; honeycomb, 436.

Chincha islands, II. 299—their guano, ib.; XVII. 469, 473.

CHINCHILLA, city of Spain, VI. 599.

—rodent quadruped, VI. 599; IV. 824; XIV. 183, 189—its fur, X. 349.

Chin-cough. See Hooping-cough.

Chine-felon, disease in animals, XXI. 557.

Chinese, VI. 557—their method of calculation, II. 8, 9—accents, 76—alphabet, 609—manner of writing, 611—compared with the Peruvians, 687—the uniformity and unchangeableness of their customs much exaggerated, 688, *n.* 8—their numerals and numerical fancies, III. 573, 576—alleged antiquity of their annals, 215; and nation, XI. 541—their architecture, III. 401; its uniformity of style, II. 688—origin, III. 747—character, 749—commerce, 756, 757—astronomy, 783—residents in Batavia, IV. 497—in Java, XII. 709—in Borneo, V. 48—language, VI. 571; XIII. 198, 199, 205—bamboo floats used by, 440—locks, 533—make no use of milk, VI. 201—chronology, 675—consuls and vice-consuls in, VII. 337—mathematical knowledge, X. 503—their filigree work, IX. 579—fuel-balls, X. 318—their mode of jappanning, XII. 699—early knowledge of gunpowder, XI. 150; and of the compass, XIV. 1—their sculpture, XIX. 848—pretended ancient knowledge of logarithms, XIII. 555—mythology, XV. 760—use of opium by, XVI. 518—paper, XVII. 249—their supposed resemblance to the Egyptians, 354—printing, XVIII. 522, *n.* 1—their skill in pyrotechny, 706—their adulterations of tea, XXI. 87—mode of colouring teas, ib.—their imitations of English precedents in regard to the tea-trade, 89—fondness for the Trepang, 985. See China.

—balance, V. 385.

—fire, in pyrotechny, XVIII. 707.

—pavilion, musical instrument, XV. 713.

—Turkestan, XXI. 367, 28.

CHINGLEPUT, in Hindustan, VI. 599.

Chingopamari, mountain, XVII. 598. See Deodunga.

CHIN-HAE, in China, VI. 599.

CHIN-KIANG-FU, VI. 600.

CHINON, in France, VI. 600.

CHI—CHL

CHINSURA, in Bengal, VI. 600.

CHIO, or Chios, VI. 600. See Scio.

CHIOGGIA, Italian town, VI. 600.

Chiolite, mineral, XV. 93.

CHIONE, VI. 600.

Chionis, genus of birds, XVI. 808.

CHIPPENHAM, in Wiltshire, VI. 600; XXI. 879—cloth manufacture of, 918.

Chippewa, river, XXI. 893.

CHIPPEWAY INDIANS, VI. 600; II. 680.

Chippewayan Mountains, XXI. 420. See Rocky Mountains.

Chippewyan (Fort), climate of, II. 674.

CHIPPING, CHIP, CHEAP, names of places signifying a market, VI. 600.

Chipping-Barnet, IV. 447.

CHIPPING-NORTON, VI. 600.

CHIPPING-SODBURY, VI. 600.

CHIQUITOS, in Bolivia, VI. 600; IX. 349—mountains, III. 129.

Chirk aqueduct, III. 338—Chirk castle, VII. 736.

Chirocentrus, genus of fishes, XII. 250.

CHIROGRAPH, VI. 600.

CHIROMANCY, VI. 600; VIII. 54.

CHIRON, VI. 600; XIV. 451—the presumed father of surgery, XX. 809.

—genus of insects, IX. 120.

Chironectes, genus of mammalia, XVI. 448.

Chironemus, genus of fishes, XII. 277.

Chironomus, genus of insects, IX. 225.

CHIRONOMY, VI. 601.

Chiropodists, XIV. 465.

Chiroptera, bones of, III. 77 *et seq.*—muscles, 91—intestines, 110.

Chiroscelis, genus of insects, IX. 130.

Chirotas, genus of reptiles, XIX. 39.

Chiru, in zoology, XIV. 210.

Chirurgery, or surgery. See Surgery.

Chirurgical academies, II. 62.

Chirus, genus of fishes, XII. 283.

CHISEL, VI. 601—chisels for turning, XXI. 391.

Chisholm (Major), III. 726.

CHISLEV, Jewish month, VI. 601.

CHISWICK, in Middlesex, VI. 601.

Chitine, VII. 537; IX. 29.

Chiton, genus of mollusks, XV. 379.

Chitonidae, family of mollusks, XV. 379.

CHITORE, in Hindustan, VI. 601.

CHITTAGONG, VI. 601; IV. 651.

Chittah, or hunting tiger, XIV. 169.

CHITTLEDROOG, town and fortress in Hindustan, VI. 601.

CHITTOR, VI. 602.

CHIUSA, in Italy, VI. 602.

CHIVALRY, VI. 602—court of, 627—period of, III. 636—origin of, VIII. 230, XIII. 108—influence of the crusades on, VII. 532—Persia the birthplace of, XV. 763—its influence on poetry, XVIII. 107—serio-comic romance of, 110—orders of, in Brazil, V. 295—romances of, XIX. 260.

CHIVASSO, city of Piedmont, VI. 627.

Chive, plant, XI. 741.

Chladni (Ernest), I. 891—on the velocity of sound in different media, ib.—on the vibration of plates, ib.—on meteoric bodies, 892; XIV. 635—on musical sounds, II. 112—on harmony, XV. 702.

Chlænaceæ, nat. order of plants, V. 185.

Chlænus, genus of insects, IX. 94.

Chlamyphorus, genus of mammalia, XIV. 191; XVII. 631.

CHLAMYS, VI. 627.

—genus of insects, IX. 149.

Chloanthite, mineral, XV. 116.

CHLOE, VI. 627.

Chloëia, genus of annelides, XI. 297.

Chloëphora, genus of insects, IX. 216.

Chloranthaceæ, nat. order of plants, V. 207.

Chlorate of potash, powder from, XI. 158—its use in making matches, XIV. 351, 352.

Chloric acid, VI. 468.

Chloride of lime, employed in bleaching, IV. 760, 761—tests for, 763—chloroform prepared from, VI. 628—as a deodorizer, XIX. 621.

—of zinc, VI. 491—as a preservative of timber, XX. 167.

CHL—CHO

Chlorides of metals, VI. 483—aluminum, 488—antimony, 494—chromium, 493—arsenic, 495—barium, 486—calcium, 487—magnesium, ib.—iron, 490—bismuth, 496—potassium, 485—manganese, 491—copper, 497—sodium, 485—strontium, 487—uranium, 496—lead, 497—mercury, 498—silver, ib.—gold, 499—titanium, ib.—tin, 493—vanadium, 494—platinum, 499. See Chemistry.

CHLORINE, VI. 627, 466; XV. 64—in plants, II. 388—its compounds with carbon, &c. (see Chlorides)—discovery of, IV. 758—used in bleaching, 758, 760; I. 589; XXI. 776—its power of destroying noxious states of the atmosphere, IV. 184—its use in determining the qualities of gas, X. 429—Sir H. Davy on, I. 969; VII. 670—its specific gravity, XII. 89—its poisonous properties, XIV. 435—as an element in the crust of the globe, XVII. 619.

—protoxide and peroxide of, VII. 670.

Chlorion, genus of insects, IX. 195.

CHLORIS, VI. 627.

Chlorite, mineral, XV. 78.

—schist, XV. 154.

Chloritoid, mineral, XV. 78.

CHLOROFORM, VI. 627, 511—employed in the management of bees, IV. 588—manner in which it may cause death, XVII. 703.

Chloromelan, mineral, XV. 79.

Chloropal, mineral, XV. 90.

Chlorophæite, mineral, XV. 90.

Chlorophane, XV. 93—phosphorescent properties of, VIII. 598.

Chlorophyll, colouring matter of plants, V. 73.

Chlorophyllite, mineral, XV. 88.

Chlorops, genus of insects, IX. 257.

CHLOROSIS, VI. 633.

Chlorospermæ, nat. order of plants, V. 218.

Chlorospinel, XV. 87.

Chlorous acid, VI. 468.

Chloruret of azote, I. 952.

Chnodomarius, VII. 306.

Choanites, fossil sponges, XVII. 93.

Chocks, in ship-building, XVI. 98.

Choco, platina mines of, XV. 236.

CHOCOLATE, VI. 633, 49; IX. 761; VII. 52—electricity of melted, VIII. 565—adulterations of, IX. 769.

—order of plants, V. 184.

—colour, dyeing of, VIII. 319.

CHOCTAW INDIANS, VI. 633; II. 680.

Choczim, Russian town, VI. 634—siege of, XXI. 371.

CHODOWIECKI (Daniel), VI. 633.

CHOENIX, Greek measure of capacity, VI. 633.

CHOERILUS, Athenian tragic poet, VI. 633.

—of Samos, epic poet, VI. 633.

CHOERINÆ, VI. 633.

Chœroichthys, genus of fishes, XII. 315.

CHOEROPOTAMUS, fossil genus of quadrupeds, VI. 633.

Choeropus, genus of mammalia, teeth of, XVI. 448.

CHOIR, VI. 633.

Choiseul (Duke de), IV. 479; X. 37.

—d'Aillecourt, on the crusades, VII. 527–28.

CHOISY-SUR-SEINE, town of France, VI. 633.

Choke-damp, VII. 643. See Carbonic acid gas.

Chokier (Surlet de), baron, regent of Belgium, IV. 608.

Choking, among cattle, XXI. 564, 571.

Cholalic acid, VI. 520.

Cholæpus, genus of sloths, dentition of, XVI. 441.

CHOLERA, VI. 633—in Paris in 1832, X. 206—in Egypt, VIII. 423—operatives in Manchester factories comparatively exempt from, XIV. 253, *n.*—may possibly be caused by animalcules, XXI. 975.

CHOLET, French town, VI. 634.

Choleva, genus of insects, IX. 114.

CHO—CHR

Chologaster, genus of fishes, XII. 236.

Cholula, pyramid of, XIV. 719, 720.

Chomatodus, genus of fossil fishes, XII. 341.

Chondrocanthus, genus of entozoa, XXI. 982.

Chondrodite, mineral, XV. 89.

Chondropterygians, fishes, XII. 205, 319.

Chondrosteus, genus of fossil fishes, XII. 338; XVII. 125.

Chondrostoma, genus of fishes, XII. 257.

Chonetes, fossil mollusks, XVII. 105.

Chonikrite, mineral, XV. 80.

CHOPIN, Scotch liquid measure, VI. 634.

Chops of the mouth, III. 48.

CHORAGIC, VI. 634—monument of Lysicrates, III. 442, 462, 468, 715; IV. 164—of Thrasyllus, III. 462—of Stewart, on the Calton Hill, Edinburgh, VIII. 406.

CHORAGUS, VI. 634.

CHORASSAN, VI. 634. See Khorassan.

CHOED, or Cord, VI. 634—in music, ib.; I. 728; XV. 720—in geometry, VI. 634; X. 513.

CHOREA, VI. 634; XVII. 700.

CHOREOGRAPHY, VI. 634.

Choreutes, devotees, XV. 407.

CHORIAMBUS, a foot, in ancient poetry, VI. 634; IX. 770.

Choridactylus, genus of fishes, XII. 283.

Chorinemus, genus of fishes, XII. 297.

Chorion, in animal physiology, XVII. 688.

Chorisis, in botany, V. 121.

CHORLEY, town in Lancashire, VI. 634.

Chorlton-upon-Medlock, XIV. 256.

Choroid coat of the eye, III. 43—in various animals, 96—whether the seat of vision, XVI. 693.

—gland of fishes, III. 96.

Choromo, silver mines of, IV. 825.

Choron on theories of harmony, XV. 702—on musical invention, 738.

CHORUS, in ancient drama, VI. 634; VIII. 134*—prohibited, 140.

—in music, VI. 634.

Chosroes, king of Persia, XVII. 435—Antioch destroyed by, III. 274—his invasion of the Roman empire, VII. 312; XVII. 195—subjugation of Egypt, VIII. 474.

—Parthian king, XVII. 312.

CHOTYN, or Choczim, Russian town, VI. 634.

CHOUGH, a species of corvus, VI. 634; XVI. 771.

Choumara on fortification, IX. 834.

CHOUS, Greek liquid measure, VI. 634.

Chowbent, in Lancashire, IV. 174.

CHRISM, VI. 634—pence, ib.

CHRIST, VI. 634—meaning of the name, I. 480, *n.* 1—establishment of his kingdom, 480—date of his birth, XII. 757; and death, 760—doctrine concerning the, XXI. 207—his twofold estate, 211—his offices, 212—proofs of his divinity, 209. See Jesus, Messiah.

—ORDER OF, VI. 634.

Christ's Hospital, London, XIII. 667.

—College, Cambridge, XXI. 466.

—thorn, XVII. 762.

CHRISTCHURCH, town in Hampshire, VI. 634.

—Cathedral, Dublin, VIII. 221.

—College, Oxford, XVII. 35; XXI. 459—founded by Wolsey, 901.

Christian era, VI. 667—Christian art, early, XIX. 859.

—VII. of Denmark, VII. 742.

CHRISTIANIA, capital of Norway, VI. 635—libraries at, XIII. 427.

Christianite, mineral, XV. 71.

CHRISTIANITY, VI. 635—dissertation on the rise, progress, and corruptions of, I. 447—in Abyssinia, II. 56—capacity of the American tribes for, 692—Lord Hailes' inquiry into the secondary causes assigned by Gibbon for its rapid progress, VII. 635, 636—inimical to theatres, VIII. 142—renunciation of, in France, X. 84—re-established by Bonaparte, 125, and *n.*—relation of Mohammedanism to, XV. 307—Gibbon's at-

CHR—CHR

tacks on, X. 615—Kant on, XIII. 51—Paley's Evidences of, XVII. 200, 202—approximation of some of Plato's doctrines to, 793—its influence on the arts, 59; and on poetry, XVIII. 106—Voltaire's disbelief of, XXI. 667—its introduction into Britain, V. 380; England, VIII. 656; Poland, XVIII. 137; Sweden, XX. 845; Spain, 459; Russia, XIX. 470; Scotland, 744, 749—establishment of, by Constantine, 353—effects of this on Rome, 364. See Christians, Jesus, Religion, Theology, Reformation.

CHRISTIANS, VI. 640—a name first given at Antioch, I. 485, *n.* 1—never applied by the Apostles to the members of any Church, 485; nor by Christians themselves to one another, *ib.*, *n.* 1, 491, *n.*—demonology of the early Christians, III. 311—persecuted in Egypt, VIII. 472, 473, 479, 485—Beybar's proceedings against, 484—funeral rites, X. 344—Pliny's letter respecting the early, XVIII. 13—persecuted by Nero, XIX. 338; Trajan, 342; Hadrian, 343; Aurelius, 344; Trajanus Decius, 348; Dioclesian, 350—favoured by Constantine, 351—discountenanced by Julian, VII. 307, 308. See Christianity.

CHRISTIANSAND, in Norway, VI. 641.

CHRISTIANSTAD, in Norway, VI. 641.

— in West Indies, XXI. 837.

Christie (Mr), on magnetism, XIV. 10, 11, 12, 33, 35, 39, 55, 56, 57 *et seq.*

Christiern, king of Denmark, his invasion of Sweden, XX. 846—chosen king of that country, *ib.*—his tyrannical reign, *ib.*—his attempts to recover the kingdom, 847.

CHRISTINA, queen of Sweden, VI. 641—reign of, XX. 851—her correspondence with Bayle, IV. 523—her invitation to Descartes, VI. 280.

Christinos, XX. 478 *et seq.*

Christison (Dr), on gas-burners, X. 425, 426—on the deleterious influence of the atmosphere of towns on plants, V. 106, 107—on the alcohol in porter, 332; in wines, XXI. 890—his work on poisons, XIV. 424.

CHRISTMAS-DAY, VI. 642, 667; XII. 757; I. 502.

Christology, XXI. 184, 207. See Christ.

Christophe, king of Hayti, XI. 257.

Christopher North. See Prof. Wilson.

CHRISTOPHERS (St), or St Kitts, island, VI. 642.

Chromate of lead, a dyestuff, VIII. 297.

CHROMATIC, VI. 643.

CHROMATICS, VI. 643; XVI. 578. See Optics, Polarization of Light.

Chromatype, XVII. 550.

Chrome, XVII. 623.

Chrome-garnet, XV. 85.

Chrome-ochre, XV. 112.

Chromic acid, VI. 493—salts of, *ib.*

Chromididae, family of fishes, XII. 265.

Chromis, genus of fishes, XII. 265.

Chromite, mineral, XV. 108.

CHROMIUM, VI. 662, 493; XV. 66.

Chromo-carbon process, employed on the maps of the trigonometrical survey, XXI. 337.

Chromo-lithography, XIII. 513.

Chromule, V. 73.

CHRONIC, VI. 662—inflammation of the liver among cattle, XXI. 569; cough in, 573.

CHRONICLE, VI. 662—of Winton, XXI. 892.

CHRONICLES, two books of the Old Testament, VI. 662.

— of the middle ages, VII. 535.

CHRONOLOGY, VI. 664; XI. 541—antediluvian, III. 267; XI. 540—ancient Egyptian, VIII. 449—the Parian chronicle, III. 720—Sir I. Newton's work on, XVI. 208—its relations to philology, XVII. 526, 527. See Calendar, Era.

Chronological schemes, number of, XI. 540.

— Table of political events, and of inventions and discoveries, from the creation to the year 1854, VI. 677.

CHR—CHU

Chronological Table of foreign authors and their works, VI. 698.

— Table of British authors and their works, from the sixteenth century, VI. 707.

CHRONOMETER, VI. 710; VII. 27—chronometer escapement, 33, 34—French, IV. 678—Earnshaw's, VII. 34—Harrison's, XIII. 686—to find the longitude by, 687; XVI. 46—improvements on, 109—importance of, in seamanship, XX. 27.

Chronometrical thermometer, VII. 30.

Chronoscopes, I. 987—electro-magnetic, XXI. 644.

CHRUDEM, town in Bohemia, VI. 710.

CHRYSALEIS, VI. 710; IX. 53 *et seq.*, 203 *et seq.*—of the silk-moth, XX. 290.

Chrysammate of potash and magnesia, optical properties of, XVI. 669.

CHRYSES, priest of Apollo, VI. 710.

Chrysidæ, tribe of insects, IX. 193.

CHRYSIPTUS, Stoic philosopher, VI. 710; I. 319.

Chrysis, genus of insects, IX. 193.

Chrysobalanæ, sub-order of plants, V. 191.

CHRYSOBERYL, a siliceous gem, VI. 710; XV. 87.

Chrysocollis, genus of mammalia, XIV. 151—dentition of, XVI. 450.

Chrysocolla, mineral, XV. 102.

Chrysocoma, genus of birds, XVI. 811.

Chrysogaster, genus of insects, IX. 240.

CHRYSLITE, gem, VI. 710; XV. 89.

CHRYSLORAS (Manuel), VI. 710.

Chrysomela, genus of insects, IX. 150.

Chrysomelinae, tribe of insects, IX. 148.

Chrysophane, mineral, XV. 79.

Chrysophora, genus of insects, IX. 123.

Chrysophrys, genus of fishes, XII. 286, 287.

CHRYSOPEASE, VI. 711, 67; II. 232; XV. 69.

Chrysops, genus of insects, IX. 231.

CHRYSTOM (St John), VI. 711—Montfaucon's edition of his works, XV. 516.

Chrysotile, mineral, XV. 80.

Chrysotoxum, genus of insects, IX. 238.

Chrysotus, genus of insects, IX. 243.

CHUB, fish, VI. 712; XII. 256—angling for, III. 161.

CHUBB (Thomas), VI. 712.

— (Mr), his locks, XIII. 536—his latch-lock, 541—his detector, 536—on locks, 535 *et seq.*

CHUDLEIGH, town in Devonshire, VI. 712.

Chumbal, mountain, VIII. 386.

CHUMBUL, river in Hindustan, VI. 712.

CHUMPANEER, in Hindustan, VI. 712.

CHUNAM, VI. 712.

CHUNAR, or Chunargher, in Hindustan, VI. 712; XVII. 21.

Chuni. See Hunni.

CHUPMESSAHITES, VI. 712.

CHUPRAH, town in Hindustan, VI. 712.

CHUQUISACA, capital of Bolivia, VI. 712—climate of, IV. 826—population of, 827, 828—university of, 830.

— department of, IV. 821.

Chuquito, or Titicaca, lake, IV. 822. See Titicaca.

CHUR, Swiss town, VI. 713.

CHURCH, VI. 713; XII. 370—churches founded by the apostles, I. 490; few particulars given of them, *ib.*—spires, III. 449—bells, IV. 628—burying in churches, VI. 22—consecration of, VII. 298—painted glass in the windows of, X. 669—in Chile, VI. 546—Greek, XI. 33—in Holland, 588—heating of, by stoves, XX. 742, 743—no established church in the United States, XXI. 422—churches in London, XIII. 666, 671, 672; Dublin, VIII. 222; Rome, XIX. 368.

— of England, VIII. 744, 792—in Ireland, XII. 531—proposed union with the Greek Church, XI. 35. See Episcopacy.

— Scotch Established, XVIII. 492—its extent, 493—constitution, *ib.*—standards, *ib.*—endowments, 494—theolo-

CHU—CIC

gical education, *ib.*—schools, *ib.*—missions, *ib.*—its relaxation in doctrine and discipline, 499—early history of the Church in Scotland, XIX. 749, 751, 753—proportion of adherents to, 801.

Church, Free. See Free Church.

— (General), XI. 29.

Church-rates, VIII. 744.

CHURCH-WARDENS, VI. 713.

CHURCHILL (Charles), satirist, VI. 715; XVIII. 124—his attack on Dr Johnson, XII. 799.

— (John), duke of Marlborough, VI. 713; III. 217—appointed general of the British forces in the war with France, 1772, V. 447—his continental campaigns, *ib.*, 448 *et seq.*; X. 34—disgraced, V. 451—his death, 464—his co-operation with Prince Eugene, IX. 368—69—palace voted to, by parliament, XXI. 518—his wealth and avarice, 519, *n.* 1.

— (Sarah), duchess of Marlborough, III. 216.

Churchman (Mr), on the variation of the needle, XIV. 49.

CHURCHYARD, VI. 715.

— (Thomas), poet, VI. 715.

CHURN, VI. 715; VII. 623.

Churning, process of, VII. 623.

Churoo, IV. 691.

Churum, Turkish town, XXI. 80.

CHUSAN, island, VI. 715, 596, 597.

Chusite, mineral, XV. 89.

CHUTTERPOOR, city of Hindustan, VI. 716.

CHYLE, VI. 716; II. 782; XVII. 660—cells, 650—vessels conveying the, II. 761; III. 62. See Lacteals.

Chylific ventricle, in insects, IX. 51.

Chylification, XVII. 660.

Chyliza, genus of insects, IX. 252.

Chyme, XVII. 659, 660.

CHYTIA, VI. 716.

Clampi (Antonio), VIII. 571.

CIBBER (Colley), VI. 716—on stage-declamation, VIII. 164; XXI. 172—his plays, VIII. 165; sums paid for, XXI. 172, 173—new dramatic characters created by, 174.

— (C. Gabriel), sculptor, XIX. 867; VI. 716.

— (Mrs), actress, XXI. 175.

— (Theophilus), actor, XXI. 175—his share in the authorship of *Lives of the Poets*, 516 and *n.* 1.

CIBORIUM, VI. 716.

Cibotia, genus of fishes, XII. 313.

CICACOLE, town in Hindustan, VI. 716.

Cicada, genus of insects, IX. 167.

Cicadariae, family of insects, IX. 166.

CICATRIX, VI. 716.

CICERO (Marcus Tullius), VI. 716—on the law of right reason, I. 86—on Cato's stoicism, 433—his anatomical knowledge, II. 751—on beauty, IV. 537—on the influence of the Athenian upon the Roman laws, VI. 739—his disbelief in a future state, I. 462, 463—his visit to the tomb of Archimedes, III. 430—on the pleasures of husbandry, II. 250—some of his works recovered by Petrarca, XVII. 499—digest of his works by Bellenden, IV. 637—Middleton's alleged plagiarism in his *Life of*, *ib.*; XIV. 810—discovery of his treatise *De Republica*, IV. 706; XIV. 96; XVII. 212—his Dialogues, VII. 799, 800—on the Roman constitution, VIII. 760—his oration for Milo, XV. 18—on mnemonics, 285—on the uniformity of moral judgments, 542—on morals, 554, 556—on virtue, 558, 559—on the universality of moral law, 569—Catiline's conspiracy suppressed by, XIX. 323; VI. 337—recent discovery of works of, XVII. 211—banishment of, XIX. 324—recall, 325—death, 328—on ancient sculpture, 854—his high estimate of physicians, XX. 812—his friendship for Varro, XXI. 528—on the existence of God, 181.

— (Quintus), IX. 577.

Cichlops, genus of fishes, XII. 288.

Cichoraceæ, plants, V. 197.

Cicindela, genus of insects, IX. 78.

CIC—CIN

Cicindelæ, tribe of insects, IX. 78—synoptical table of, 80.

Cicinnurus, genus of birds, XVI. 768.

CICISBEO, VI. 721; XII. 662.

CICLUT, or Cicluch, VI. 721.

CICOGNARA (Leopold), count, VI. 721—on Etruscan art, XIX. 850, *n.*

Ciconia, genus of birds, XVI. 799.

CICUTA, water-hemlock, VI. 721.

CID, the, VI. 721; II. 619—Chronicle of, XVIII. 112; XX. 468.

Cidaridæ, family of echinoderms, XXI. 991.

CIDARIS, mitre of the Jewish high-priest, VI. 721.

— genus of echinoderms, XXI. 989, 991—fossil, XVII. 99, 100.

Cidarites, echinoderms, XXI. 989.

CIDER, or Cyder, VI. 721; IX. 759—tax upon, in 1763, V. 467—mulberry-cider, XI. 717—Devonshire, VII. 764—Herefordshire, XI. 349—France, X. 256.

CIEZA, or Zieza, Spanish town, VI. 722.

CIGAR, VI. 722; XXI. 294, 295—manufacture of, at Seville, XX. 66, 490.

Cigna on electricity, VIII. 529.

CIGNANI (Carlo), Italian painter, VI. 722.

Cignolis' catalogue of stars, IV. 80.

CIGOLI (Lodovico Cardi da), VI. 722.

CILIA, VI. 722—in the infusoria, III. 207—in zoophytes, XXI. 973 *et seq.*

Ciliary circle and processes of the eye, III. 43, 96; XIII. 461.

CILICIA, VI. 722—coins of, XVI. 377.

CILICUM, VI. 723.

Ciliogrades and ciliograda, zoophytes, XXI. 1000, 1001.

CIMABUE (Giovanni), VI. 723; XVII. 61.

CIMAROSA (Domenico), VI. 723.

Cimbex, genus of insects, IX. 183.

CIMBRI, ancient Celtic nation, VI. 723; V. 374; X. 574; XX. 883—their war with the Romans, XIX. 319—Cimbriac language, XIII. 212.

Cimento, Accademia del, II. 63.

CIMMERII, VI. 724.

Cimex, genus of insects, IX. 163.

CIMOLIA TERRA (Cimolite), VI. 724.

Cimolite, XV. 84; VI. 724.

CIMON of Cleonæ, painter, VI. 724; XVII. 53—catagrapha said to have been invented by, VI. 330; XVII. 53, *n.* 2.

— son of Miltiades, VI. 724—Athens improved by, IV. 160—his exploits, banishment, and death, 201, 202.

CINALOA, in Mexico, VI. 724. See Sinaloa.

CINCHONA, or Peruvian bark, VI. 724; IV. 444; V. 196; VII. 230—region of the cinchonas, V. 228; XVII. 629.

Cinchonaceæ, nat. order of plants, V. 195.

Cinchonine, VI. 518.

CINCINNATI, in Ohio, VI. 725; XVI. 490—climate, XXI. 421—mean temperature, VI. 773.

CINCINNATUS (Lucius Quintus), VI. 726; XIX. 300.

Cinclus, genus of birds, XVI. 753.

Cinders, use of, in mortar, XX. 714.

CINEAS, a Thessalian, VI. 726.

Cinematics, branch of geometry, XIV. 384.

CINERITIOUS, VI. 726. See Brain.

Cingalese, or Singhalese, VI. 391—language, XIII. 207.

Cinna, XIX. 321.

CINNABAR, mineral, VI. 726, 498; VIII. 388; XV. 122, 237—fibrous and hepatic, 122.

CINNAMON, VI. 726; IV. 445; V. 204—imports of, VIII. 734—oil of, XVI. 496—culture of, in Ceylon, VI. 394, 400; Cochinchina, VII. 48.

Cinnamon-colour, dyeing of, VIII. 313.

Cinnamon-stone, XV. 85; XVII. 623.

Cinnyris, genus of birds, XVI. 769.

Cinquecento, Italian works published during the period so named, XII. 660.

— style of architecture, III. 450, *n.* 1, 453 *et seq.*; XXI. 495.

Cinquefoil, in architecture, III. 508.

CINQUE PORTS, VI. 727; XVI. 89—arms of, XI. 323.

Cintio, his romances, XIX. 284.

CIN—CIS

- CINTRA, town in Portugal, VI. 727—Convention of, V. 604; XVIII. 387; XXI. 821.
Cinulia, fossil mollusks, XVII. 109, 111.
CINYRA, VI. 728.
CIOTAT (La), French town, VI. 728.
CIPHER, or Cypher, VI. 728; III. 582.
CIPOLIN, or Cipollino, an Italian marble, VI. 728; XV. 92, 147.
CIPPUS, VI. 728.
CIPRIANI (Giovanni Battista), VI. 728.
Circæus, genus of birds, XVI. 743.
CIRCARS (Northern), in Hindustan, VI. 728.
CIRCASSIA, VI. 730—inhabitants of, 342, 731; IX. 346—contests with Russia, XIX. 498.
CIRCE, VI. 731.
—genus of mollusks, XV. 350.
Circæidæ, zoophytes, XXI. 1000.
CIRCEII, town of Latium, VI. 731.
Circellones. See Circumcelliones.
CIRCENSIAN GAMES, VI. 731, 733.
CIRCLE, VI. 732; X. 513, 544, 552—attempts to ascertain the ratio of the diameter to the circumference, I. 699—its incommensurability first demonstrated by Lambert, 700—problems respecting, X. 527—quadrature of, 580; XX. 520—of curvature, in conic sections, VII. 285—mensuration of, XIV. 509—perspective of, XVII. 447—Mural, IV. 153—repeating, Borda's improvement of the, V. 37—of perpetual apparition, and of perpetual occultation, VI. 732.
CIRCLES, of the sphere—of altitude—diurnal—horary—of latitude—of longitude—polar—Druidical—of the empire, VI. 732.
CIRCUIT, VI. 732—inconveniences of circuit-courts, VIII. 786.
CIRCULAR, VI. 732—instruments—numbers—sailing, ib.—saws, XIX. 677—arches, XX. 728.
Circulation of the blood, see Blood—of the sap in plants, V. 110; Coulomb on, VII. 464.
Circulating trade-museums, XXI. 324.
CIRCUM, VI. 732.
CIRCUMCELLIONES, VI. 732.
CIRCUMCISION, VI. 732—practised in Arabia, III. 354—by the ancient Egyptians, VIII. 440—by the Kafirs, XIII. 36.
Circumduction, action of the muscles, III. 40.
CIRCUMFERENCE, VI. 733; X. 513.
CIRCUMFERENTOR, VI. 733.
CIRCUMPLEX, VI. 733.
CIRCUMGYRATION, VI. 733.
CIRCUMLOCUTION, VI. 733.
CIRCUMPOLAR STARS, VI. 733.
CIRCUMPOTATIO, VI. 733.
CIRCUMSCRIBED, VI. 733.
CIRCUMVALLATION, VI. 733.
CIRCUS, VI. 733—Maximus, ib.—games of the, VI. 731, 734; X. 399.
—genus of birds, XVI. 744.
CIRENCESTER, VI. 734; X. 682; XXI. 879—Royal Agricultural College near, X. 680; II. 366.
Cirillo (Dr Domenico), on the Sicilian papyrus, XVII. 246.
Cirrhatus, genus of annelides, XI. 299.
Cirrhobarbus, genus of fishes, XII. 309.
Cirrhigra, echinoderms, XXI. 984.
Cirrhilabrus, genus of fishes, XII. 267.
Cirrhinus, genus of fishes, XII. 257.
Cirrhispinigra, echinoderms, XXI. 984.
Cirrhites, genus of fishes, XII. 277.
CIRRIPEDES, VI. 734—fossil, XVII. 100, 101—their near approach to the crustacea, VII. 543—their classification, XV. 319.
Cirrus, cloud, XIV. 656—cirro-cumulus, ib.—cirro-stratus, ib.
—fossil mollusks, XVII. 111.
CIRTA, city of Numidia, VI. 734; XVI. 350.
Cis, genus of insects, IX. 142.
CISALPINE, VI. 734—republic formed, XII. 653.
CISNEROS (Francisco Ximenes de), VI. 734. See Ximenes.

CIS—CLA

- CISPADANA GALLIA, VI. 734.
CISSAMPELOS PAREIRA, a plant used in medicine, VI. 735.
Cisoid of Diocles, X. 544.
Cistaceæ, nat. order of plants, V. 188.
Cistela, genus of insects, IX. 132.
Cistelides, tribe of insects, IX. 132.
CISTERCIANS, VI. 735.
CISTERN, VI. 735—barometer, IV. 453—blow-up cisterns, XX. 794.
Cistus-rape order of plants, V. 209.
CITADEL, VI. 735.
CITADINESCA, a kind of Florentine marble, VI. 735.
CITHÆRON, mountain in Boeotia, VI. 735.
CITHARA, VI. 735. See Lyre.
Citharinus, genus of fishes, XII. 246.
CITIZEN, VI. 735—of Rome, XIX. 306, 321—Italians admitted to the rights of Roman citizens, 320; and all subjects of the empire, XX. 458—citizenship in the United States, XXI. 430.
Citric acid, VI. 515; XIII. 331—used for discharging colours, VIII. 316—scurvy cured by, XVI. 106.
Citron, V. 186; XI. 729; XII. 445.
CITRUS, genus of plants, VI. 735; V. 185, 186.
CITTA DI CASTELLO, town of the Papal States, VI. 735.
—VECCHIA, in Malta, VI. 736; XIV. 116.
CITTERN, VI. 736.
CITY, VI. 736—influence of cities on civilisation, XIII. 255.
CIUDAD RODRIGO, VI. 737—taken by the French, V. 608—stormed by the British in 1812, 611; XXI. 824.
—REAL, in Spain, VI. 737.
—REAL, in Mexico, VI. 737.
CIUDADELA, in Minorca, VI. 737.
CIVET, VI. 737; XIV. 166.
CIVIC CROWN, VI. 737.
CIVIDADE, in Italy, VI. 737—battle of, XX. 256.
CIVIL, VI. 737.
—engineers, institution of, III. 506—academical rank of, at Durham, XXI. 472.
—engineering, I. 801—its relation to physics, 865.
—LAW, VI. 737; XIII. 255—study of it accelerated human improvement at the revival of letters, I. 14—venerated by Leibnitz, &c., 92—ought to be the groundwork of speculations on jurisprudence, 93—Cujas on, VII. 572—study of, at Bologna, XXI. 449; Oxford, 452.
—LIST, VI. 748; VIII. 751; XVII. 298—sum fixed for the civil list of the Sovereign, XI. 773—of the United States, XXI. 428.
—STATE, VI. 748.
—war, in Rome, XIX. 321—in Switzerland, XX. 886.
—YEAR, VI. 748, 76.
CIVILIAN, VI. 748—college of civilians, VII. 113.
Civilisation, its existence a proof of superhuman instruction, I. 452—low capacity of the aboriginal Americans for, II. 692—American, 683; IX. 348—flourishes most in temperate regions, II. 689—what it consists of, XI. 545—its connection with Christianisation, XV. 274—its progress in Europe, IX. 395—true basis of modern, XIV. 459—linguistic records of, XVII. 537—ancient mysteries supposed to commemorate the origin of, XV. 754—its effect on poetry, XVIII. 96.
CIVITA CASTELLANA, VI. 748.
—DI PENNE, town of Naples, VI. 748.
—VECCHIA, in Italy, VI. 748; XVII. 240, 243.
CIVRAY, in France, VI. 748.
CLACKMANNAN, VI. 748—trigonometrical survey of, XXI. 334.
CLACKMANNANSHIRE, VI. 749; XIII. 95—agricultural statistics, XIX. 796, 797, 798—population, 799.
Cladacanthus, fossil fishes, XVII. 117.
Claddagh, X. 892.

CLA—CLA

- Cladius, genus of insects, IX. 183.
Cladocyclus, genus of fossil fishes, XII. 346.
Cladodactylus, echinoderms, XXI. 986.
Cladodus, genus of fossil fishes, XVII. 118.
Cladyodon, fossil reptile, XVII. 141.
CLAGENFURT, VI. 751. See Klagenfurt.
CLAGETT (William), VI. 751.
CLAIR OBSCURE, VI. 751. See Claro-obscuro.
—(St), lake in Canada, VI. 751, 137.
CLAIRAUT, or Clairaut, (Alexis-Claude), VI. 751—on universal gravitation, I. 693, 780, 781—on the connection of gravity and the figure of the earth, 851 and n.—on achromatic glasses, II. 93—on the retardation of Halley's comet, I. 694, 783; III. 809—on the earth's figure, I. 777; IX. 552, 573—on capillary attraction, I. 731; XII. 96; VI. 207—his genius and character, I. 783 and n.—on the problem of the three bodies, III. 809; IV. 105—on the inequalities of the moon's motion, IV. 104—on the spectrum, XVI. 583.
Clairfayt (General), X. 87, 88.
Clairville, his entomological works and system, IX. 10.
Clairvoyance, XX. 429, 437, 444—its fallacy exposed, 438, 439, 442—unworthy of credit, 446—a form of spirit-rapping, 445.
Clamant sins, XXI. 201.
CLAMECY, town in France, VI. 751.
CLAMPING, in joinery, VI. 751.
CLANDESTINE, VI. 751.
Clangula, genus of birds, XVI. 816.
CLANS, VI. 751—spirit of clanship among the Arabs, III. 350.
Clapeyron (M.), on the moving power of heat, XX. 561.
CLAPHAM, in Surrey, VI. 752.
—caves of, XXI. 957.
CLAPPERTON (Hugh), African traveller, VI. 752—his discoveries in Africa, II. 210; X. 477—his visit to Borgoo, V. 40—his account of Houssa, XI. 777 et seq.
CLARE, in Ireland, VI. 752—agricultural statistics, XII. 515, 517.
—or Claremorris, town in Mayo, VI. 755.
—Island, VI. 755; XIV. 370.
Claremont Palace, IX. 332.
CLARENCIEUX, VI. 755; XI. 320.
CLARENDON (Constitutions or Institutions of), VI. 755; VIII. 672.
—(Earl of), VI. 755. See Hyde.
—printing-press at Oxford, XVII. 35.
CLARET, VI. 755; XXI. 883—alcohol in, 890—consumption of, 891.
CLARI (Giovanni Carlo Maria), VI. 755.
CLARIAS, genus of fishes, XII. 260, 262.
CLARICHORD, VI. 755.
CLARIFICATION, VI. 755—of sugar, XX. 797.
CLARIGATIO, VI. 756.
CLARION, VI. 756.
CLARIONET, VI. 756; XV. 710.
CLARISSÉS, order of nuns, VI. 756.
Clarius (Isidore), his critical edition of the Bible, IV. 701.
Clark (Bracy), on bots, IX. 246; XXI. 569.
—(D. K.), his locomotive furnace, XX. 359—on back-pressure in steam-engines, 601.
—(Edwin), on the strength of iron, I. 874—his work on the Britannia Bridge, &c., 878—on iron bridges, XII. 605, 606, 607.
—(Sir James), on the climate of Madeira, XIII. 799.
—(Prof.), on the hot and cold blast processes, XII. 551.
—(William), on photography by absorption of light, XVII. 551.
CLARKE (Adam), LL.D., VI. 756—his Bibliographical Dictionary, IV. 714.
—(Dr), on the size and weight of infants, III. 2.
—(EDWARD DANIEL), LL.D., traveller, VI. 756—his experiments with

CLA—CLA

- the oxyhydrogen blowpipe, IV. 794—on the temperature of springs in the plain of Troy, XXI. 357.
Clarke (E. M.), his electripeter, XXI. 643—his magneto-electric machine, 647.
—(J. Algernon), on chalking land, II. 303.
—(Mary Anne), her connection with the Duke of York, V. 605.
—(SAMUEL), VI. 757.
—(Dr Samuel), primus, VI. 757.
—(Dr SAMUEL), secundus, VI. 757—his controversy with Leibnitz, I. 139, 142, n.—on the existence of a God, 141, 142—early development of his reflective powers, ib.—character and genius of, 143, 343—his controversy with Collins, 144—on necessity, 149—his moral doctrines, 344—his erroneous application of the term *relation*, 345—difference between his system and Cudworth's, 347—on the force of a moving body, 655—on the different kinds of deists, VII. 701—Butler's correspondence with, VI. 29—his theory on the basis of moral rectitude, XV. 554.
—(WILLIAM), VI. 758.
CLARKSON (Thomas), VI. 758—his opposition to the slave-trade, XX. 321—on the complexion of the human species, VII. 223.
Claromontanus (Codex), XIX. 838.
CLARO-OBSCURO, VI. 758—engraving, VIII. 799, 880. See Chiaroscuro.
Clashbennie, fossil fishes of, XVII. 457, 124.
CLASS, VI. 758—in natural history, III. 182; V. 175—distribution of classes of plants over the globe, 222—Oken on the classes of animals, XVI. 498. See Classification.
CLASSIC, VI. 758—different editions of the classics, IV. 709.
Classical ancient history, XI. 542—historians, 548—classical learning, XVIII. 369—romances, XIX. 256—palimpsests, XVII. 210—classical philology, 518, 522, 525; distinction between classical and comparative philology, 527; old classical philology combined with comparative grammar, 533.
—trips examination at Cambridge, XXI. 464.
CLASSICUM, VI. 758.
Classification, natural and artificial systems, III. 173—Aristotle on, 552.
—of animals, III. 172 et seq., 182, 183—by Aristotle, XIV. 122, 123—by Linnaeus, III. 184—Virey, ib.—Lamarck, 185—Dumeril, 190—Blainville, ib.—Macleay, 191—Cuvier, 192—of animalcules 194, 196—arachnides, 372—fishes, XII. 226—crustacea, VII. 540—insects, IX. 58 et seq.—importance of the teeth in, XVI. 407, 477—of zoophytes, XXI. 982, 986, 991, 1004. See the different articles on Natural History.
—of plants, V. 174—systems of, 176—artificial systems, ib.—Linnaean, 177—natural systems, 178—Jussieu's system, 179; XIII. 25, 26—De Candolle's V. 179
Lindley's, ib.—Adanson's views on, II. 131—Cæsalpinus on, VI. 56.
—of minerals, XV. 67.
—of rocks, XV. 129, 155.
—of books, IV. 715.
—of steam-engines, XX. 602.
CLATHRI, VI. 758.
CLAUBERG, (John), VI. 759.
CLAUDE (Jean), VI. 759; XXI. 506—his conference with Bossuet, V. 60.
—LORRAINE, VI. 759; III. 712, 713—his Liber Veritatis, 713, n.—compared with Turner, XXI. 388—specimen of sketches by, VIII. Plate.
—(St), town of France, VI. 759.
Claudet (Mr), his stereomonscope, XX. 688.
CLAUDIA, VI. 759.
CLAUDIUS (Claudius), Latin poet, VI. 759.
CLAUDIUS I., Roman emperor, VI. 760; H

CLA—CLE

- reign of, XIX. 337—resemblance to James I. of England, V. 389, n.
 Claudius II., Roman emperor, VI. 760; XIX. 349.
 CLAUSE, VI. 760.
 Clausel (General), governor of Algiers, II. 573, 575.
 CLAUSENBURG, VI. 760. See Klausenburg.
 Clausilia, genus of mollusks, XV. 373.
 Clausius, his equation for the latent heat of steam, XX. 567.
 Claussen (Mr), his method of bleaching flax, IV. 768—his process for making flax-cotton, IX. 656.
 CLAUSTHAL, VI. 760. See Klausenthal.
 Clausthalite, mineral, XV. 717.
 Clavagella, genus of mollusks, XV. 350—*C. aperta*, 351—*C. lata*, 343—fossil, XVII. 108.
 CLAVARIUM, VI. 760.
 Clavastus (Angelus), on blasphemy, IV. 754.
 Clavella, fossil mollusks, XVII. 110.
 Clavellina, genus of mollusks, XV. 332.
 Clavellinidae, family of mollusks, XV. 332.
 Clavering (Capt.), his researches in Greenland, XI. 41—on the fire of St Elmo, VIII. 588.
 CLAVES INSULÆ, VI. 760.
 Claviastria, echinoderms, XXI. 991.
 CLAVICHORD and Clavichorium, VI. 760.
 CLAVICLE, VI. 760; III. 31. See Collarbone.
 Clavicornes, family of insects, IX. 112.
 CLAVICYMBALUM, VI. 760.
 Claviger, genus of insects, IX. 153.
 Clavipalpi, family of insects, IX. 151.
 CLAVIUS (Christopher), VI. 760—on the calendar, 82—on dialling, VII. 776—on geometry, X. 504.
 CLAVUS, VI. 760; III. 167—annalis, ib.
 CLAY, VI. 760; XV. 83, 142; XVIII. 430—as used in brickmaking, V. 344—clay soils, 97—nature and kinds of, 343; XV. 83—specific gravity of, XII. 88—clay books, XVIII. 431—eaten by some American tribes, II. 693—composition of potter's, V. 343—Baume's dissertation on, 344—its contraction by heat, XI. 269—its use in modelling, XIX. 844.—burnt, as a manure, II. 304.—(HENRY), American statesman, VI. 760.—(Mr), his process of manufacturing iron, XII. 544.
 Claying fen lands, II. 363.—of sugar, XX. 795.
 Clay-slate, XV. 142, 153—in Scotland, XIX. 792—analysis of, II. 391.
 Claystones, XV. 70, 135.
 CLAYTON (Robert), D.D., VI. 760.—(Rev. John), his discovery of coal-gas, X. 409.—Shuttleworth, and Co., their direct-action horizontal steam-engine, XX. 608, 610—their portable engines, 614.
 Clayton-Bulwer treaty, XV. 663.
 CLAZOMENE, town of Ionia, VI. 760—coins of, XVI. 376.
 Cleanliness, its influence on health, XIV. 440—the best preservative from vermin, XXI. 549, 550.
 Cleansing of towns, XIX. 618.
 CLEANTHES, Stoic philosopher, VI. 760—repatee of, I. 320.
 Clear (Cape), VII. 372.
 CLEARCHUS, VI. 760.
 Cleasby (Richard), his dictionary of the old Norse or Icelandic language, XVII. 528.
 CLEAT, VI. 760.
 Cleavage, in minerals, XV. 55—of topazes, VIII. 564—electricity produced by, 563—in rocks, XV. 178.
 CLECHE, in heraldry, VI. 761.
 CLEDGE, VI. 761.
 CLEDONISMUS, VI. 761.
 CLEF, in music, VI. 761, 419.
 Cleg, insect, IX. 232.
 Clegg (Mr), his improvements in gas-making, X. 410—his gas-retort, 412—meter, 422—method of separating ammonia from coal-gas, 418.

CLE—CLE

- Cleirac (Mons.), on insurance, XII. 394, 395.
 CLEISTHENES, VI. 761; IV. 198.
 Cleithral, in architecture, III. 508.
 Cleithros, in architecture, III. 508.
 Cleland (Dr), his statistics of the people employed in the Glasgow cotton-mills, VII. 451—on the mortality in Glasgow, XV. 613.
 CLEMENS ROMANUS, VI. 761.—(TITUS FLAVIUS), or Alexandrinus, VI. 761—on Egyptian writings, XI. 375.
 CLEMENT V. (Pope), VI. 761—his collection of Constitutions, 190, 762.—VII. (Pope), VI. 761—his conduct in reference to the divorce of Henry VIII., VIII. 699.—XI. (Pope), VI. 761.—XIV. (Pope), VI. 761—Canova's monument to, 193—Jesuitism suppressed by, XII. 756.—(David), on rare books, IV. 709.—(M.), on steam, IX. 407.—IX. 490; his epistle to the Corinthian church, ib.
 CLEMENTI (Muzio), VI. 761.
 CLEMENTINE, VI. 762.
 CLEMENTINES, Constitutions of Pope Clement V., VI. 762, 190; XVII. 208.
 Clement's Inn, London, XII. 385.
 CLENARD (Nicholas), VI. 762.
 Clendinning (Dr), on the weight of the organs of the human body, III. 3.
 CLEOBIS and BITON, VI. 762.
 CLEOBULUS, one of the seven sages, VI. 762.
 CLEOBURY MORTIMER, VI. 762.
 Cleodora, genus of mollusks, XV. 359, 360—fossil, XVII. 111.
 CLEOMBROTUS, VI. 762; XXI. 177.
 CLEOMEDES, Greek astronomer, VI. 762—on optics, XVI. 521.
 CLEOMENES, sculptor, VI. 762.—kings of Sparta, VI. 762; IV. 198; XX. 502.
 Cleonic war, II. 199.
 CLEON, VI. 762; IV. 205; XVI. 251—Aristophanes' ridicule of, VIII. 139.
 Cleonus, genus of insects, IX. 140.
 CLEOPATRA, VI. 762; VIII. 471; XIX. 326, 329, 330—her connection with Mark Antony, III. 283—manner of her death doubtful, 760—Egyptian queens of that name, VIII. 470.
 Cleopatra's Needles, II. 472; VIII. 497.
 Cleophas, father of James the Less, II. 617.
 CLEOSTRATUS, astronomer of Tenedos, VI. 763—his improvement of the calendar, 79.
 Clephis, Lombard king, XIII. 638.
 Clepsina, genus of annelides, XI. 307, 305.
 CLEPSYDRA, water-clock, VI. 763; VII. 564—D. Bernoulli on the construction of, IV. 675—Amontons on the, II. 725.
 Clepticus, genus of fishes, XII. 267.
 CLERC (Daniel le), VI. 763; XIV. 462—his character of Paracelsus, I. 18—his History of Medicine, XX. 814, n. 2.—(JEAN LE), VI. 763—his controversy with Burman, V. 786—his acquaintance with and respect for Locke, I. 106, n. 1—his Parrhasiana, II. 738—his French New Testament, IV. 701—his edition of Menander and Philemon, V. 787.—(Le), his history of worms, XXI. 981.—(SEBASTIAN LE), engraver, VI. 763.
 CLERCK (Charles), his entomological works, IX. 5.
 CLERGY, BENEFIT OF, VI. 764; III. 706.—in Great Britain, VIII. 744—rank of, in England, 743—in Edgar's reign, 659—burning of obnoxious books by, IV. 712—imposition of hands, XI. 205—their fondness for trial by ordeal, XVI. 702—generally long lived, XIV. 442—must always have existed from the times of the apostles, I. 504—reserve fund, in Canada, VI. 158—their exclusion from Parliament, XVII. 294—of Austria, IV. 317—Belgium, 616, 617—Bolivia, 829—France, X. 45, 243; their

CLE—CLI

- impious adulation of Napoleon, X. 134, n.—Greece, XI. 33—Iceland, XII. 199—Ionian islands, 446—Ireland, 530—Italy, 661—Jamaica, 676—Papal States, XVII. 244—Russia, XIX. 526, 527, 529—Turkey, XXI. 380—Scotland, IV. 371, n., 372; V. 384—Sweden, XX. 865—medicine disgraced by their practice of it, 816, n. 3.
 Cleril, tribe of insects, IX. 111.
 CLERK, VI. 764—clerk of the irons, VII. 74—period of hiring, XIV. 350—diseases to which clerks are subject, 442—of the pipe, XVII. 714—number of clerks in London, XIII. 660.—(Sir George), on weights and measures, XXI. 802—bill on, proposed by, 803 and n. 2.
 Clerk-marshal and chief equerry, XI. 776.
 CLERKE (Capt. Charles), navigator, VI. 765; VII. 340, 341.—(JOHN, of Eldin), VI. 765—his improvements in naval tactics, XXI. 724.
 CLERMONT, or Clermont-Ferrand, French city, VI. 765—population, X. 277—extinct volcanoes of, XXI. 606.—DE LODEVE, in France, VI. 765.—MANUSCRIPT, VI. 765.—(the), first passenger steam-boat, XX. 638.
 CLEROMANCY, VI. 765.
 Clerus, genus of insects, IX. 111.
 CLEVELAND, city in Ohio, VI. 765.—(JOHN), poet, VI. 766.—(Duchess of), her intimacy with Wycherley, XXI. 941, 942.—in Yorkshire, XXI. 957, 958—its breed of horses, II. 338; XXI. 958.
 CLEVES, Prussian town, VI. 766.
 CLEW, VI. 766.
 Clias (Capt.), on gymnastics, XI. 169.
 Click, in mechanics, XIV. 400.
 CLIENT, VI. 766; XVII. 343.
 CLIFFDEN, town in Ireland, VI. 766.
 Clifford's Inn, London, XII. 385.
 CLIFTON, suburb of Bristol, VI. 766; V. 370.—Moor, skirmish of, XXI. 843.
 CLIMACTERIC, VI. 766.
 CLIMATE, VI. 766; XVII. 610—its effect on the active energies of man, II. 683—insignificant effect of the proper heat of the earth on, I. 950—cause of secular change of, ib.—insular and continental, XVII. 612—zones of, IX. 70—that of Britain favourable to exertion, XIV. 277—its modifying influence on animals, III. 161, 182; XI. 633—its influence on man, IX. 342; on trees, XVII. 755; health, XIV. 443; the arts, XVII. 49; complexion, VII. 223—its influence on the distribution of plants, V. 219—influenced by exhalation from the leaves of plants, 104—in geography, X. 464, 484—its dependence on geographical situation, XIV. 637; and elevation above the sea-level, XVII. 610—of America, II. 673—Arabia, III. 341—Asia, 726—Bengal, IV. 648—Canada, VI. 139—Chile, 543—California, 94, 96—Ceylon, 392—Denmark, VII. 746—Orkney, XVI. 719—Europe, IX. 381—England, VIII. 718—Scotland, XIX. 795—France, X. 241—Greece, XI. 13—Himalayas, 442—Hindustan, 450—United States, XXI. 421. See Atmosphere, Cold, Dew, Meteorology, and the geographical articles generally.
 Climatius, genus of fossil fishes, XVII. 117.
 Climatology, general principles of, XIV. 663.
 CLIMAX, VII. 1.
 Climbers, order of birds, XVI. 774.
 Climena, genus of annelides, XI. 302.
 CLINCH, VII. 1.
 CLINCHER, VII. 1.
 CLINCHING, VII. 1.
 CLINIAS, of Tarentum, VII. 1.
 CLINICAL, VII. 1—medicine, XIV. 461, 462.
 Clinker-build, VII. 1.
 Clinkstone, XV. 132, 134.
 Clinocera, genus of insects, IX. 232.
 Clinoclure, mineral, XV. 78.

CLI—CLO

- CLINOMETER, VII. 1.
 Clinton, group of rocks, XV. 199.—on the Pelasgi, XVII. 371.—(Sir Henry), XXI. 750—his operations in the American revolutionary war, 752.
 Clintonite, mineral, XV. 79.
 Clinus, genus of fishes, XII. 309.
 CLIO, one of the Muses, VII. 1; XV. 699—statue of, VIII. Plate.—genus of mollusks, XV. 362.
 Clionia, fossil sponges, XVII. 93.
 Clipping of horses, XI. 669.
 Clitellaria, genus of insects, IX. 237.
 CLITHEROE, in Lancaster, VII. 1.
 CLITOMACHUS, VII. 1.
 CLITOR, town of Arcadia, VII. 1.
 Clitoris, III. 71—erectile tissue of, II. 799.
 CLITUMNUS, river, VII. 1; XIX. 180.
 CLITUS, a Macedonian, VII. 1.—genus of insects, IX. 145.
 CLIVE (Robert), Lord, VII. 2—his transactions in India, XI. 482 *et seq.*—accusations brought against him by General Burgoyne, V. 476—his acquittal, 477.
 Clivina, genus of insects, IX. 85.
 CLOACÆ, at Rome, VII. 2—Cloaca Maxima, ib.; III. 443; XIX. 358.—in comparative anatomy, III. 112, 113.
 CLOACINA, VII. 2.
 Clock, VII. 2—slow improvement of, III. 706—astronomical, IV. 153—water-clocks, VI. 763, see Clepsydra—Bain's electric, I. 986; XXI. 644; Wheatstone and Steinhill's, ib.—sympathetic, I. 986—American electric-registration clocks, ib.—value of the imports of, VIII. 734—application of a clock movement to telescopes, XXI. 144. See Chronometer, Pendulum.—AND WATCH WORK, VII. 2.
 Clockmaker's compasses, VII. 221.
 Clodio, X. 2.
 CLODIUS PULCHER (Publius), VII. 38; XIX. 325—his enmity to Cicero, VI. 718.
 Clodomer, king of Orleans, X. 4.
 CLOGHER, in Ireland, VII. 38; XXI. 408, 409.
 Cloislinianus (Codex), XIX. 838.
 CLOISTER, VII. 38.
 Clonakilty, town in Ireland, VII. 370, 371, 372.
 CLONMEL, in Ireland, VII. 38; XXI. 285, 288, 768—taken by Cromwell, XII. 484.
 Cloutz (Anacharsis), X. 58, 71.
 Cloquet (M.), his system of anatomy, II. 767; III. 73—case of a surgical operation during magnetic sleep, related by, XX. 428.
 Clos (La), his romances, XIX. 289.
 CLOSE, in heraldry, VII. 38.
 Close-times, in salmon rivers, IX. 611, 612 613—seasons of, for different districts. 614, n. 1—table of, in different districts of Ireland, 621.
 Clossius (Dr), his discovery of parts of the Theodosian code, VI. 744; and of a document regarding its reception by the Roman senate, 742.
 Closter Seven, capitulation of, V. 464.
 Clot of the blood, II. 780.
 Clotaire, king of France, X. 4.
 Clot-Bey, on the diseases of Egypt, VIII. 423—on the population of Egypt, 444—temperature of Egypt, 422.
 CLOTH, VII. 38—cloth trade in Leeds, XIII. 312 *et seq.* See Cotton, Calender, Dyeing, Silk, Weaving, Woollen manufacture.
 Cloth-weavers, foreign, their settlement in England, XXI. 914, 915.
 Cloth-workers, Company of, XXI. 913.
 Clothing, flannel, IX. 654—its influence on health, XIV. 441; XIX. 611.
 CLOTHO, one of the Fates, VII. 38; XVII. 272.—genus of arachnides, III. 379.
 Clotilda, wife of Clovis, X. 3.
 CLOUD, VII. 38; XIV. 655—nomenclature of clouds, XIV. 655—colour of, 682—peculiar disposition of, on Crossfell, VII. 578—their electricity, VIII. 581.

CLO—COA

CLOUD (St), French town, VII. 40.
 CLOUDBERRY, alpine plant, VII. 40; XI. 719.
 Clouston (Rev. Charles), on the flora and climate of Orkney, XVI. 719.
 CLOVER, VII. 40—culture of, II. 322, 327—seed, 336.
 CLOVES, VII. 40; V. 192—oil of, XVI. 496—culture of, in Amboyna, II. 660; and in Bourbon, V. 247—imports of, VIII. 734.
 Clove-tree, II. 660.
 Clovewort order of plants, V. 184.
 CLOVIO (Giorgio Giulio), VII. 40.
 CLOVIS I., founder of the French monarchy, VII. 40; X. 2.
 Clowes (William), surgeon, XX. 818.
 CLOYNE, in Ireland, VII. 40—cathedral of, 370.
 Club-foot, surgical treatment of, XX. 835.
 Club-moss order of plants, V. 216, 144.
 Clubs, farmers', II. 265.
 —in London, XIII. 675.
 Clunch, XV. 142—used in building, XX. 712.
 CLUNY, French town, VII. 40.
 —(Hotel de), museum of, Paris, XXI. 322.
 CLUPEA, genus of fishes, VII. 40; XII. 237—fossil, 347.
 —taken by the Romans, VI. 288.
 Clupeidae, family of fishes, XII. 235–36—fossil group of, XVII. 91.
 Clupeonia, genus of fishes, XII. 237.
 Clupesocidae, family of fishes, XII. 249.
 Clusiaceae, nat. order of plants, V. 186.
 CLUSIUM, now Chiust, city of Etruria, VII. 40.
 CLUSIUS, or Ecluse (Charles d'), VII. 41.
 Cluthalite, mineral, XV. 75.
 CLUVIER (Philip), VII. 41.
 CLUYD, VII. 41, or Clwyd, 735—vale of, ib.—river, ib.
 CLYDE, VII. 41; XIII. 174; X. 645; XIX. 791—diving-bell used in improving its navigation, VIII. 66; XVI. 70—improvement of, X. 651; XVI. 76—dredging of the, 68, 69—physical characters of, 87—tonnage of vessels built on the, VIII. 740—navigation of, X. 651—vessels arriving at, ib.—canal to the Forth and, VIII. 236; XVI. 55; XIX. 808—falls of, XIII. 174; XIX. 791.
 —iron-works, XII. 551, 552.
 Clydesdale, XIII. 174.
 —horses, II. 338; XI. 662; XIII. 175.
 Clyers, in cattle, XXI. 571.
 Clymenia, fossil mollusks, XVII. 112.
 Clypeaster, fossil echinoidea, XVII. 100.
 —genus of insects, IX. 152.
 Clypeasteridae, echinoderms, XXI. 991.
 Clypeastridae, fossil echinoidea, XVII. 100.
 CLYTEMNESTRA, VII. 41; II. 230.
 Clythra, genus of insects, IX. 149.
 Cnidaria, polypes, XXI. 1004.
 Cnidon, genus of fishes, XII. 275.
 CNIDUS, VII. 41.
 CNOSSUS, or Gnosus, VII. 41—labyrinth at, XIII. 141.
 COA VESTIS, VII. 42.
 COACH, VII. 42—hackney and stage coaches, 43—origin of the name, XIII. 215. See Carriage, Chariot.
 —or Couch, VII. 43.
 —Mail, VII. 43. See Mail Coaches.
 Coach-horse, XI. 658.
 COACHMAKING, VII. 43.
 Coachman, XIII. 525.
 Coade's artificial stone, XX. 735.
 Coagulum of the blood, II. 780.
 COAHUILA, or Cohahuila, in Mexico, VII. 43; XIV. 718, 718, 728.
 COAK, or Coke, VII. 44; X. 433; XX. 628, 631—Calvert's method of purifying, X. 320—for furnaces, 360—in iron manufacture, XII. 542—consumption of, by locomotives, XX. 358.
 COAL, VII. 44; XV. 123, 148—its geological position among the stratified rocks, VII. 116, 118—varieties of, 117, 118; XX. 628—methods of searching for, VII. 118—boring for, 119—winning, ib.—working, 121—different methods of

COA—COA

working, ib.—quantity produced annually in the six principal coal countries, 126—extent of the coal areas in these countries, 127—its properties as fuel, X. 319—report on, as suited to the steam navy, ib.—method of purifying, 320—formation of, XV. 146—gas obtained from, X. 313, 314 *et seq.*—wood coal of Antrim, III. 284—the main cause of developing the cast-iron manufacture in Britain, VI. 184—coal measures, XVII. 623—distribution of, 624—its composition and decomposition, XX. 628—chemistry of the combustion of, 629, 631—heat arising from combustion of, 630—qualities of different kinds in the United Kingdom, as adapted for steam-vessels, 652—evaporative power of, 653—treatment of, in marine furnaces, ib.—specific gravity of, XII. 88—brown coal, V. 237; XV. 123, 149; XVII. 641—cannel, XV. 123, 149—earthy, ib.—slate, ib.—splint, 149—caking, ib.—cherry or soft, ib.—consumption of, in London, XIII. 665—influence of abundant supplies on manufactures, XIV. 276—iron smelting with, XII. 543—combustion of, XX. 352—composition of, ib.—consumption of, by locomotives, 358—in Austria, IV. 313—in Bavaria, 517—Belgium, 624—Chili, VI. 549—Clackmannanshire, 750—Cumberland, VII. 577—Derbyshire, 755—Devonshire, 763—Dumfriesshire, VIII. 235—Durham, 266—Edinburghshire, 408—England, 716, 725—Europe, IX. 387—France, X. 250—Glamorganshire, 642—Hindustan, XI. 457—Illinois, XII. 362—Iowa, 460—Ireland, 504—Japan, 689—Kilkenny, XIII. 84—Lancashire, 173—Lancashire, 179—Leitrim, 327—Monmouthshire, XV. 498—New South Wales, IV. 281—Northumberland, XVI. 299—Pennsylvania, XVII. 395, 624—Prussia, XVIII. 668—Russia, XIX. 543—Scotland, 804—Staffordshire, XX. 529—Stirlingshire, 702—Sumatra, 805—Sweden, 861—Tennessee, XXI. 155—Tipperary, 285—Tyne, 407—United States, 420—Vancouver's Island, 520—Virginia, 598—Whitehaven, 855—Yorkshire, 958. See Colliery, Coal Trade, and the geographical articles generally.
 Coal-fish, XII. 269—fishery of, IX. 648; XX. 113.
 Coal-gas, VI. 473; X. 409 *et seq.*—quantity yielded by different kinds of coal, 413, 414—impurities of, 415—apparatus for purifying, ib.—analysis of, 430—compared with oil-gas, 428, 429—hints for the improvement of, 431—economy of, 432—its use as fuel, 322—consumption of, in London, XIII. 665.
 Coal-measures, in geology, XV. 202—comparative extent of their areas in Europe and America, VII. 127. See Carboniferous Period.
 Coal-mines. See Coal, Colliery.
 Coal-oil, X. 433.
 COAL-TRADE, VII. 44—London, XIII. 662—Glasgow, X. 650—Newcastle, XVI. 166—Sunderland, XX. 808—number of persons engaged in, VIII. 726—proposed duty on coal exported, XXI. 60.
 Coal-work. See Colliery.
 Coalbrook coal-mines, XXI. 285.
 Coalbrookdale, XX. 229, 230—iron bridge of, XII. 575, 576; V. 363.
 Coalition ministry, V. 506; IX. 853; XVII. 731—its fall, VII. 513.
 COAMINGS of a ship, VII. 45; XX. 190.
 COANZA, river in Congo, VII. 45.
 Coast, change of level in that of Belgium, IV. 611—defences of, III. 695—arrangements of lights on, XIII. 481—coastlines, XVII. 584, 571—elevation of the coasts of Sweden, XX. 860—cause of volcanoes being distributed along coastlines, XXI. 606—non-volcanic coastlines, 607.
 —CASTLE (Cape), VII. 45.
 COASTING-TRADE, VII. 45—of Scotland, XIX. 806.

COA—COC

COAT, or COAT OF ARMS, in heraldry, VII. 45; XI. 321—differences of, 326—of mail, VII. 45.
 Coatis, or Coati mondis, quadrupeds, XIV. 155—dentition of, XVI. 462.
 Cob, horse, XI. 656.
 COBALT, VII. 45; VI. 492; XV. 66, 246—earthy, 112—in Devonshire, VII. 763—Cornwall, 407—in Chile, VI. 548—specific gravity of, XII. 88—magnetism of, XIV. 16, 27.
 —vitriol, XV. 98.
 —ochre, XV. 112.
 —bloom, XV. 104.
 Cobaltine, XV. 115.
 COBBETT (William), VII. 45—his Weekly Register, XVI. 189.
 Cobden (Richard), his agitation against the corn-laws, V. 670.
 Cobham (Lord), follower of Wycliffe, XXI. 947.
 —(Elinor), VIII. 659.
 COBILJA, or Puerto la Mar, in Bolivia, VII. 46; IV. 827.
 Cobitis, genus of fishes, XII. 258, 256—fossil, 346—*C. barbatula*, loach, angling for, III. 162.
 COBLE, small boat, VII. 46.
 COBLENTZ, German city, VII. 46—group of rocks, XV. 199—government of, XIX. 145.
 Cobra di capello, XVII. 634; XIX. 64—in India, XI. 456; held sacred there, V. 267.
 COBURG, VII. 46. See Saxe-Coburg.
 COCA, narcotic drug, VII. 46; IV. 824; V. 186—its general use in Peru, XVII. 472.
 Coccei (Samuel de), his commentary on Grotius' work *De Jure Belli et Pacis*, I. 92.
 COCCETUS (John), VII. 46.
 Coccinella, genus of insects, IX. 152.
 Coccinella, mineral, XV. 107.
 Coccolepis, genus of fossil fishes, XII. 334.
 COCCOLITE, VII. 46; XV. 81.
 COCCOLOBA, genus of plants, VII. 46.
 Coccolepis, genus of fossil fishes, XII. 339; XVII. 121, 122.
 Coccotenthis, fossil cuttle-fish, XVII. 113, 114.
 Coccothraustes, genus of birds, XVI. 761.
 Cocculus Indicus, bitter narcotic fruit, V. 181.
 Coccus, genus of insects, IX. 172.
 Coccyx, human, III. 4, 7—of the lower animals, 76.
 Coccyzus, genus of birds, XVI. 778.
 COCHABAMBA, in Bolivia, VII. 46; IV. 821, 826, 827.
 COCHIN, in Hindustan, VII. 46.
 COCHIN-CHINA, VII. 47; III. 735.
 —fowls, II. 356—prices paid for, 357.
 COCHINEAL, VII. 50—its introduction as a dyestuff, VIII. 274—its nature and history, 283—its culture in Mexico, XIV. 717; in the Canary Islands, VI. 164—value of the imports of, VIII. 734.
 —insect, IX. 172—plant it feeds on, V. 194; XIV. 717.
 Cochinealin, VIII. 284.
 Cochlea of the ear, III. 47, 98; XVII. 679.
 COCHLEARY, VII. 50.
 Cochliodus, genus of fossil fishes, XII. 341; XVII. 118.
 Cochrane (Admiral), his proceedings against the United States, V. 617.
 —(Lord), his proceedings with the Brazilian squadron, V. 287—burning of the French ships by, in 1809, 607—exploit at Callao, XVII. 467—his management of the naval affairs of Chile, VI. 553—appointed admiral of the Greek fleet, XI. 29.
 —(Sir Thomas), his proceedings against the pirates of Borneo, V. 49.
 Cock, VII. 50—domestic, XVI. 788—Bankiva, 789—Jago, ib.—jungle, ib.—Macartney, 790—divination by means of cocks, II. 460.
 —in clocks and watches, VII. 23, 29.
 Cock-chaffer, IX. 125—modes of destroying it, XXI. 549.

COC—CCE

Cock-dog, XX. 220.
 Cock-fighting, VII. 50; XVI. 789, 790.
 Cock-paddle, fish, XII. 306.
 COCK-PIT, VII. 50—in a ship of war, 51.
 Cockatoos, birds, XVI. 783.
 COCKATRICE, VII. 51; IV. 486—in heraldry, XI. 334.
 COCKBURN (Henry Dundas), VII. 51—on Sir James Gibson-Craig, 477—his notices of Sir H. W. Moncreiff, XV. 415; of Dr Robertson, XIX. 232—on Dr Andrew Thomson's appointment to a church in Edinburgh, XXI. 232.
 —(Sir George), admiral, his edition of the Queen's Regulations and Admiralty Instructions, XVI. 104, 107.
 —island, XVIII. 181.
 COCKERMOUTH, VII. 51.
 Cockfield Fell trap-dyke, XV. 189.
 Cocklane Ghost, XII. 799.
 COCKLE, VII. 52; XV. 349; IX. 765—fossil cockle-shells, XVII. 107.
 COCKNEY, VII. 52.
 COCKROACH, VII. 52; IX. 156—method of destroying it, XXI. 549.
 Cockscomb, plant, V. 203.
 —pyrites, XV. 115.
 COCKSWAIN, VII. 53—pay of, XVI. 111.
 COCLES (Horatius), VII. 52; XVIII. 366; XIX. 298, 357, n. 2.
 COCOA or Cacao, VII. 52—imports of, VIII. 724—adulterations of, IX. 769—tree, V. 185—in India, XI. 454—Guayaquil, 78. See Chocolate.
 —plum, V. 191.
 COCOA-NUTS, VII. 52; XVI. 395—tree, V. 214—in Ceylon, VI. 394, 399, 400.
 COCOON, VII. 52; IX. 205, 211 *et seq.*—silk, XX. 290, 291, 292, 293—produce of silk cocoons, in Lombardy, XIII. 654—different kinds of silk cocoons, XX. 279.
 Cocos, islands, XIII. 57.
 Cocote, a disease in cows, XV. 11.
 COCYRUS, VII. 52.
 COD, VII. 52; XII. 268—as an article of food, IX. 764—mode of curing, 647—migrations of, XVII. 636—red, or rock cod, XII. 269.
 —oil, and Cod-liver oil, XVI. 328, 493.
 Cod-fishery, VIII. 727—Scotch, IX. 645; XIX. 804—quantity cured and exported, IX. 646—of Newfoundland, 647; XVI. 171, 172; XII. 268—of Ireland, 634—of France, X. 265.
 Coddington (Mr), on the grooved sphere lens, XIV. 769, 770 and n.—on the periscopic achromatic sphere, 773—his improvement of the compound microscope, 776—on the spherical aberration of lenses, 771.
 CODE, VII. 52; XIII. 272—Solon's, IV. 195—Austrian, 319—Bolivian, 834—Cretan, VII. 493—of Louisiana, XIII. 272—French codes, X. 281, 132; code of conscription, VII. 297—of Alaric, II. 439—Venetian, of maritime law, VII. 533—Menu, or Hindu code, VI. 317, 318; XI. 476—Chinese, VI. 564—Napoleon, X. 132; XIII. 272; XV. 793—Roman, VI. 742—of the Two Sicilies, XX. 252—Spanish, 467—international code, XIII. 282, 289. See Law, Legislation.
 CODELA, or Codeine, VII. 52; VI. 518.
 Codex Ephreimi, XVII. 208.
 Codices, ancient, VIII. 42—of the New Testament, XIX. 838.
 CODICIL, VII. 53; VI. 738.
 Codification, XIII. 271.
 CODLIN, apple, VII. 53; XI. 716.
 CODOGNO, in Lombardy, VII. 53.
 CODON, VII. 53.
 CODRINGTON (Christopher), VII. 53.
 —(Admiral), V. 651.
 —(General Sir William), XIX. 510.
 CODRUS, last king of Athens, VII. 53; IV. 193.
 Cœclophis, genus of fishes, XII. 232.
 Cœcuban wine, XXI. 882.
 COEFFICIENT, in algebra, VII. 53; II. 490 *et seq.*—in meteorology, XIV. 664.
 Coehorn. See Cohorn.
 Cœlacanthi, family of fossil fishes, XII. 336, 350; XVII. 123.

CCE—COI

Cœlacanthus, genus of fossil fishes, XII. 336; XVII. 125.
Cœle, in Athens, IV. 169.
Cœlestius, XVIII. 477—on original sin, XXI. 203.
Cœlestyria, VII. 53; XVII. 182; XX. 903, 904.
Cœloxys, genus of insects, IX. 200.
Cœlogaster, genus of fossil fishes, XII. 347.
Cœlogenys, fossil species of, XVII. 173.
Cœlopa, genus of insects, IX. 254.
Cœlorhynchus, genus of fossil fishes, XII. 346; XVII. 128.
Cœlus, VII. 53.
Cœmptio, VII. 53.
Cœna, VII. 53.
Cœnites, fossil animals, XVII. 98, 96.
Cœnobite, VII. 53.
Cœnomyia, genus of insects, IX. 230.
Cœnosia, genus of insects, IX. 250.
Cœnus, XIII. 770.
Coercion, one of the means by which religious errors have been kept up, I. 523—Acts, for Ireland, in 1822 and 1823, V. 634, 663.
Coesfeld, Prussian town, XIII. 132.
COFFEA ARABICA, coffee-tree, VII. 53; V. 196—supposed to be originally a native of Abyssinia, XVII. 628—its culture in Arabia, III. 345—Brazil, V. 294—Bourbon, 247—Ceylon, VI. 399—Hayti, XI. 255—Java, XII. 705—Mexico, XIV. 717.
COFFEE, VII. 54; IX. 761—chicory mixed with, *ib.*—Mokha coffee, III. 345; XV. 293—adulterations of, IX. 769.
COFFEE-BERRY, VII. 54.
 —colour, dyeing of, VIII. 313.
Coffee-houses—Procope coffee-house in Paris, VII. 104—in Damascus, 640.
Coffee-trade, VII. 54—quantity imported, VIII. 734—effects of the reduction of the duties on coffee, XXI. 71.
COFFER, in architecture, VII. 55; III. 508—in fortification, VII. 55.
COFFER-DAM, VII. 55; XVI. 71; XX. 722—of iron, 723.
Coffey (Mr), his still, VIII. 50.
COFFIN, VII. 55—impropriety of using lead coffins, XIX. 620—Egyptian, III. 501—coffins kept by the Chinese in their houses, VI. 571.
 —(Captain J.), on ambergris, II. 658.
 —(J. H.), on the polar winds, XVIII. 177.
Coffin-bone, in the mammalia, III. 82.
Cogging, in carpentry, V. 746.
COGGLESHALL, Great, in Essex, VII. 55.
COGNAC, French town, VII. 55—brandies of, V. 276.
COGNATE, in Scotch law, VII. 55.
COGNATION, in civil law, VII. 55.
Cognizances, in heraldry, XI. 337, 338.
COGNOMEN, VII. 55; II. 242.
Cognoscenti, in painting, XVII. 86.
Cohahuila, Mexican state, XIV. 728. See *Coahuila*.
COHESION, VII. 56—of surfaces, XVIII. 72—strength of materials arises from, XX. 748—the doctrine of, yet a new subject, 755—great varieties of, 756—its force proportional to the area of the section perpendicular to the extending force, *ib.*—of metals, *ib.*, 757—woods, *ib.*, 758—proportion between the absolute cohesion and the relative strength of timber, 775—cohesive strength of woods and metals, 779.
 —of fluids, VII. 56; XII. 90—Coulomb on, VII. 464—capillary action, VI. 207; XII. 90, 96; I. 731, 732; see that article.
COHOBATION, VII. 65.
COHORN (Menno, Baron de), VII. 65—on fortification, IX. 815.
COHORT, VII. 65; III. 631.
COIF, VII. 66.
Colignet (Michael), on navigation, XVI. 4.
Coilia, genus of fishes, XII. 237, 213.
COIMBATORE, in Hindustan, VII. 66.
COIMBRA, Portuguese city, VII. 66; XVIII. 398—university of, 397; XXI. 492.
COIN, VII. 66—ancient coins, *ib.*; value

COI—COL

of Jewish, *ib.*—Roman and Grecian coins, 66, 67—adulteration of, II. 154—abrasion of, 47—degradation of the value of, in the sixteenth century, VII. 375, *n.* 1—its state in the reign of William III., VII. 378—coins not signs of value; in what sense measures of value, XV. 419—gold coins of different countries, 441, 442; silver, 443, 444, 445—advantages of coined money, 418—arms on coins, XI. 322. See Numismatics, Money, Coinage.
COINAGE, VII. 68; XV. 418—decimal, VII. 691; XV. 430—duodecimal, *ib.*—Boulton's improvements in, V. 246—of Ireland, XII. 526—ancient modes of coining, XVI. 358, 382—probable cause of the die sometimes adhering to the coin, XX. 753—of tin, VII. 407—of Portugal, XVIII. 398—coining of false money, XIV. 427. See Numismatics, Coin.
Colpu, in zoology, XIV. 186.
COIR, VII. 95—ropes, XIX. 401.
Colter (Volcher), his anatomical researches, II. 760.
Colton Arthur, cromlech, XVII. 374.
COKE, VII. 95. See *Coak*.
 —(Sir Edward), VII. 95—on libel, XII. 356—on the government and laws of England, VIII. 757 *et seq.*
 —(Sir John), on postal arrangements, XVIII. 403, 404.
Cokum, or *Kokum*, oil, XVI. 496.
Col, mountain pass, XVII. 591.
COLABA, in Hindustan, VII. 96; V. 1.
 —(Angrias territory), VII. 97.
COLAIE LAKE, in Hindustan, VII. 97.
COLAPOOR, VII. 97.
Colaptes, genus of birds, XVI. 777.
COLAR, town in Hindustan, VII. 97.
COLARBASUS, a Gnostic, VII. 97.
Colaris, genus of birds, XVI. 765.
Colaspis, genus of insects, IX. 149.
COLBERG, in Pomerania, VII. 97.
COLBERT (Jean Baptiste), marquis of Segnelay, VII. 97; X. 34—his commercial regulations, 257—manufactures improved by, 251; XVIII. 215—dyeing encouraged by, VIII. 274—his formation of the Academy of Sciences, II. 63—his ordinance for publishing bills of mortality in Paris, XV. 617—his exertions to improve the French navy, XX. 134—woollen manufactures promoted by, XXI. 920.
Colby (Colonel), employed on the trigonometrical survey of Scotland, IX. 551—his contrivance for measuring the base line, 554; XVIII. 703; XXI. 332.
Colchagua, in Chili, VI. 547.
COLCHESTER, in Essex, VII. 98; IX. 336.
 —(Lord). See *Abbot* (Charles).
Colchicaceæ, nat. order of plants, V. 213.
COLCHICUM AUTUMNALE, VII. 98; V. 79, 213—alkaloid from, XIV. 439.
 —order of plants, V. 213.
COLCHIS, in Asia Minor, VII. 98.
COLCOTHAR, VII. 99.
COLD, VII. 99—reflection of, I. 762—pulsations of, in the air, VI. 783; instrument for indicating these, *ib.*, 784—Dr Wollaston's mode of producing artificial, VII. 544—Leslie's, XIII. 345—Dr Currie on the medical effects of, VII. 549—alleged coldness of the moon's rays, 766—preservative effects of, IX. 767—radiation of cold, XI. 264—means of producing, 271, 275—from evaporation, VI. 459; IX. 413—death from, XIV. 431—its effects on the spine, XVII. 702—produced by voltaic electricity, XXI. 626—in Tibet, 247—Siberia, XIX. 549—in the polar regions, XVIII. 178, 179—ebullition produced by, XX. 558. See *Congelation*, *Heat*, *Ice*, *Polar Regions*.
 —a disease. See *Catarrh*.
Cold-Bath-Fields prison, XVIII. 572.
COLDEN (Cadwallader), VII. 108.
COLDINGHAM, VII. 108—priory, IV. 681—fishings at, 680.
COLDSTREAM, VII. 108.
COLE (William), botanist, VII. 108.

COL—COL

Cole (Robert), on roller-spinning, XX. 509.
Cole-fish, XII. 269. See *Coal-fish*.
Colebrookdale, XX. 229—early use of coal at, VII. 116; iron ore of, XX. 230—iron-stone China, *ib.*
COLEBROOKE (Henry Thomas), VII. 108—his translation of a Hindoo mathematical work, II. 487—his comparison between the Indian algebraists and Diophantus, *ib.*—on the Sanscrit grammarian Pāṇini, XVII. 519—his edition of the *Amara-Cōsha*, 527—contributions to philology, 529, 541.
Coleoptera, order of insects, IX. 25, 73.
Coleorhiza, in botany, V. 77.
COLERAINE, in Londonderry, VII. 109; XIII. 680, 682.
COLERIDGE (Samuel Taylor), VII. 109—his mistake as to the *Parva Naturalia* of Aristotle, I. 443—his explanation of Luther's visions, III. 312, *n.*—on the German drama, VIII. 167—68—his connection with the drama alluded to, 168—his remark on Shakspeare, XI. 37—on association of ideas, XIV. 596, *n.* 3; XV. 286—on the thinking principle, XIV. 617, *n.* 1—on Milton, XV. 22—his definition of genius, X. 450—his newspaper writings, XVI. 185—on personality, XIV. 617, *n.* 1—on poetry, XVIII. 95—poetry of, 126—his opinion of George Fox, 714—on Rabelais, 742—on Shelley, XX. 102, 104—his opinion of Whitaker, XXI. 851, *n.*—on Prof. Wilson's waste of talent, 878—his friendship with Wordsworth, 930, 931.
COLEROON RIVER, VII. 112; VI. 243.
Colerus (Jean), on the Life of Spinoza, I. 264; XX. 513, 514.
COLESHILL, in Warwick, VII. 112.
COLET (John), VII. 112.
Coleworts, XI. 737.
COLGONG, in Hindustan, VII. 112.
Colias, genus of insects, IX. 207.
COLIBERTS, in law, VII. 112.
Colic, painters, XIV. 434.
 —in horses, XXI. 566, 565.
COLIGNI (Gaspard de), VII. 112; X. 32.
Colima, Mexican state, XIV. 728, 718.
Colina, hot springs of, in Chile, VI. 543.
Colisa, genus of fishes, XII. 290.
COLISEUM, VII. 112—in Rome, II. 730, 731; III. 469, 515—buildings constructed from its materials, XIX. 366—in London, XIII. 668.
Colius, genus of birds, XVI. 762.
COLL, island, VII. 112; XI. 278.
 —Castle, XX. 843.
Collado (Luis), on gunnery, XI. 103, 114, 136.
Colladon (Dr), on electro-magnetism, VIII. 601—on the compressibility of liquids, XII. 78.
COLLAR, VII. 112—Knights of the, *ib.*
 —in mechanics, friction of, XIV. 406.
Collar-bone, in man, III. 31—the mammalia, 80—birds, 85—reptiles, 88.
Collard (M. Royer), X. 196, 198—Reid's philosophy taught by him in Paris, I. 404—his attempts to render speculative philosophy popular in France, *ib.*—his speech on the liberty of the press, X. 193.
COLLATE, VII. 113.
COLLATERAL, VII. 113.
COLLATION, in law, VII. 113.
COLLE (Raffaellino da), VII. 113.
COLLECT, VII. 113.
COLLEGE, VII. 113—of Surgeons and Physicians, Edinburgh, VIII. 400; London, XIII. 672.
 —of Justice, in Scotland, VII. 114; VIII. 395—institution of, XIX. 771.
Colleges, seats of learning, VII. 113; XXI. 443 *et seq.*; in the University of Paris, 447; Bologna, 450; Oxford, 455, 459; Cambridge, 462, 463, 465; St Andrews, 473—in Bengal, IV. 652—in Massachusetts, XIV. 340—New York, XVI. 230—United States, XXI. 423, 493. See *Universities*.
COLLEGIANTS, a religious sect, VII. 115.

COL—COL

COLLEGIATE Church, VII. 115.
COLLET, VII. 115.
Colletes, genus of insects, IX. 198.
Colletta (General), his history of the kingdom of Naples, XX. 261.
Colliciat, ammonites, XVII. 113.
Collier (Arthur), on the non-existence of an external world, I. 168, *n.* 3, 274.
 —(Sir F. A.), his attack on the pirates of Borneo, V. 49.
 —(JEREMY), VII. 115—on the immorality of the stage, VIII. 163; XXI. 173, 516—Congreve's contest with, VII. 247.
Collier's filter, IX. 581, 582.
 —combing machine, XXI. 924.
Colliers, laws relating to, XIV. 349—their former servile state, XX. 320.
COLLIERY, VII. 116—choke-damp and fire-damp in, 643—means of protection against these, 125—Davy's safety-lamp, 671; Stephenson's, I. 883—collieries in Lanarkshire, XIII. 175; in Lancashire, Cheshire, and North Wales, 179. See *Coal*.
COLLIMATION, line of, VII. 127—error of, *ib.*
Collin (Mr), his fire-escape, XIII. 438.
COLLINGWOOD (Cuthbert, Lord), VII. 127—his conduct at the battle of Cape St Vincent, V. 560; and at Trafalgar, 598.
COLLINS (Anthony), VII. 129—his controversy with Dr Clarke, I. 144; VI. 757—on the doctrine of necessity, I. 148—on the impossibility of liberty, 265; his notion of it the same as that of Hobbes, 268—Locke's regard for, 263—on the tenets of the Epicureans and Stoics, 266—Bentley's answer to his Discourse of Freethinking, IV. 659.
 —on book-keeping, V. 15.
 —(Samuel), on comparative anatomy, II. 763.
 —(WILLIAM), poet, VII. 129—merits of his poetry, XVIII. 124.
 —(WILLIAM), landscape painter, VII. 129.
 —(W. Wilkie), his account of the pilchard fishery, IX. 643, 644.
COLLINSON (Peter), naturalist, VII. 130.
 —(Capt.), his expedition in search of Sir J. Franklin, X. 474; XVIII. 174—spars of Franklin's vessels found by, X. 299, *n.*
COLLIQUAMENTUM, VII. 130.
COLLISION, VII. 130.
 —of vessels at sea, VII. 130.
Colliuris, genus of insects, IX. 79.
Collodio-albumen process, in photography, XVII. 549.
COLLODION, VII. 131; XI. 95—processes in photography, XVII. 547, 548.
Collospæria, zoophytes, XXI. 1008.
COLLUMPTON, in Devonshire, VII. 132.
COLLUTHUS, VII. 132.
COLLYRIDANS, VII. 132.
COLLYRIUM, eye-salve, VII. 132; XXI. 577 and *n.*
COLMAN (George), the elder, VII. 132; XXI. 174—his comedies, VIII. 166.
 —(GEORGE), the younger, VII. 132—his John Bull, VIII. 168.
COLMAR, city of France, VII. 132; XIX. 143.
Colmate, Italian mode of draining, XXI. 394.
COLNE, town in Lancaster, VII. 132.
 —river, XI. 359; XIV. 807.
Colobata, genus of insects, IX. 253.
Colobodus, genus of fossil fishes, XII. 337.
COLOCYNTH, VII. 132; V. 193.
COLOGNA, VII. 133.
COLOGNE, VII. 133—early printing at, XVIII. 532—the Rhine at, XIX. 144—government of, 145.
Cololites, fossils, XVII. 101.
Colombat, on stammering, XX. 534.
COLOMBIA, VII. 133; II. 702, 703—history of, IV. 819 *et seq.*—now divided into three states, New Granada, Venezuela, and Ecuador, VII. 137; which see—wines of, XXI. 888, map of, Plate.
COLOMBO, capital of Ceylon, VII. 134;

COL—COL

VI. 391 *et seq.*—diurnal change of temperature at, XIV. 670.
 Colomesiana, II. 739.
 COLON, VII. 134—atomy of, III. 61—comparative anatomy of, III.
 —in grammar, VII. 134; XVIII. 685.
 COLONEL, VII. 134—colonel-lieutenant, lieutenant-colonel, ib.—price of commission and pay, 202.
 Coloni, Roman, XIX. 318.
 Colonial period of the history of the United States, XXI. 432.
 —timber, XXI. 278—wool, 907; imports and exports of, 911, 912; prices current of, 912, 913.
 —churches, in connection with the Established Church of Scotland, XVIII. 494.
 —Universities, XXI. 490.
 Colonists of the United States, XXI. 435.
 COLONNA, VII. 134.
 —CAPE, VII. 134; IV. 191; XX. 808.
 —(GIOVANNI PAOLO), VII. 134.
 —Palace, XIX. 369.
 —(VITTORIA), VII. 134.
 COLONNAGE, in architecture, VII. 134.
 Colonus, genus of fossil fishes, XVII. 125.
 COLONY, VII. 134—British colonies, 147; population of, VIII. 755; postal arrangements for, XVIII. 406, 417—modification of the system of trade with, in 1826, V. 643—number of vessels registered at the different British, VIII. 740—foreign, VII. 149—evils of the Spanish colonial system, XIV. 707, 708—bishops in the colonies, IV. 734—life assurance in the British colonies, XII. 413—colonies of France, X. 263—Denmark, VII. 745—Holland, XI. 582—Portugal, XVIII. 398—Roman, XIX. 307—reforms in the slave-law of, from 1823 to 1830, XX. 324—effects of war on the English colonies, XXI. 434—of the United States and those of Great Britain, ib.—colonial period in the history of the United States, 432.
 COLOPHON, in Asia Minor, VII. 151—in Bibliography, ib.; XVIII. Plate.
 COLOPHONITE, mineral, VII. 151; XV. 85.
 COLOPHONY, VII. 151.
 Coloquintida, or bitter apple, V. 193.
 COLORADO, Mexican river, VII. 151; XVII. 604, 777.
 COLORATURA, in music, VII. 151.
 COLOSSÆ, VII. 151.
 Colosseum. See Coliseum.
 COLOSSIANS, Epistle to the, VII. 151.
 Colossochelys, fossil tortoise, XVII. 640.
 COLOSSUS, VII. 151—of Rhodes, ib.; VI. 422; XIX. 148; composed of bronze, VII. 350; probably a light-house, XIII. 463—of Cardinal Borromeo, III. 673.
 COLOSTRUM, VII. 152. See Beestings.
 Colot (Germain), French surgeon, XX. 817.
 COLOUR, VII. 152; VI. 657; XIII. 453—Knight's doctrine as to the beauty of colours, IV. 550, 551—their beauty derived from association, 551—primary, resolvable into red, green, and violet, I. 751—periodical, VI. 646; XVI. 598—mistaken notions regarding colour the cause of much error in philosophy, I. 64—Dr Reid on, 65, n. 2—connection between it and extension and figure, 65—its varieties useful in enabling us to distinguish the figures and distances of bodies, 66—Addison on the colouring of nature, 273—separation of, by refraction, VI. 644, 658—colours of the aurora borealis, IV. 245—of halos and parhelia, VI. 645—of the rainbow, ib.—of thin plates, 646; XVI. 599—of double plates, VI. 647; XVI. 620, 621—of supernumerary rainbows and glories, VI. 648—of striated substances, 649—of mirrors and thick plates, 650; XVI. 619—of deflected light, VI. 650—of diffracted light, 651—of mixed plates, 652; XVI. 623—of doubly-refracting substances, VI. 655—of clouds, VII. 39; XIV. 682—of the electric spark, VIII. 545—of

COL—COL

stars, IV. 85—of leaves, V. 107—of metals, VI. 482; XVI. 686—plants, VII. 152; V. 151—of quadrupeds, XIV. 85, 86—of thorough-bred horses, XI. 644—of hounds, 769—minerals, XV. 58—fashion in colours, IX. 487—of heat, I. 956—of light, XVI. 578—of the atmosphere, 691—of the sea, XVII. 574—influence of electricity on, VIII. 597—used in mourning dresses, XV. 667—of fibres, XVI. 622—of thin crystallised plates in polarized light, 648—colours in crystals with one and two axes, 666, 667—of elliptical and circular polarization, 685—of natural bodies, 692—of dispersed light within solid and fluid bodies, 693—produced by the unequal action of light on they es, 696—brilliancy of, in marine productions of the tropics, XVII. 635—of the camoleon, XIX. 37—of serpents, 43—resemblance of the colours of birds to those of the places they inhabit, XX. 226—of wool, XXI. 905—coloured rings formed on metallic plates by voltaic currents, 632.
 Colour-blindness, VII. 153; XVI. 696; XVII. 678—Dr Dalton's case, VII. 637—Dr George Wilson's researches on, XXI. 874.
 Colouring, in phrenology, XVII. 563.
 —of sculpture, XIX. 844, 865 and n.
 Colours, perception of, —are the blind capable of distinguishing them by touch? IV. 773, 777—incapacity of distinguishing, VII. 153.
 —in heraldry, VII. 152; XI. 324.
 —in the human species, VII. 152, 222; II. 677.
 —in painting, VII. 152—colours used by the ancients, 671—in drawing, VIII. 174—discharge of, in dyeing, 316—in pottery and porcelain, XVIII. 443—printing in, 555—printing of coloured engravings, XIV. 734. See Painting.
 —in glass-staining, X. 668.
 Colquhoun (Dr), on the consumption of corn in the United Kingdom, in 1814, VII. 395—his analysis of Lanarkshire iron ore, XII. 540.
 —on the police of London, XVIII. 193.
 —on mesmerism, XX. 414—on phrenomagnetism, 441.
 Colza. See Colza.
 COLT, VII. 154; XI. 636 *et seq.*
 —(Colonel), his manufacture of revolvers, XI. 100, 102.
 Coltness iron-works, XII. 549.
 COLUBER, serpents, VII. 154; XIX. 56—fossil species, XVII. 153—teeth of, XVI. 431, 432—colubiform serpents, XIX. 63.
 Colugos, teeth of, XVI. 452.
 COLUMB-KILL, VII. 154; XII. 440.
 COLUMBA, pigeon, VII. 154; XVI. 792.
 —(Sr), VII. 154; XIII. 639—his preaching in Germany, X. 578—his residence in Iona, XII. 441—the Christianizer of Scotland, XIX. 744.
 —island in the Firth of Forth, XII. 367.
 COLUMBANUS, Irish monk, VII. 154; X. 578.
 COLUMBARIUM, VII. 154.
 Columbella, genus of mollusks, XV. 386.
 Columbellina, fossil mollusks, XVII. 109.
 COLUMBIA, U. S., VII. 154; XXI. 419.
 —College, New York, XVI. 230; XXI. 493.
 —in South Carolina, VII. 154.
 —in Pennsylvania, VII. 155.
 —River, VII. 155; XVII. 604—climate of, II. 674—fur stations on, X. 346.
 Columbian printing-press, XVIII. 558.
 —College, Washington, XXI. 493, 768.
 Columbic acid, VI. 494.
 Columbite, mineral, XV. 109.
 COLUMBIUM, metal, VII. 155; VI. 494.
 COLUMBETES, islands, VII. 155.
 COLUMBUS (Christopher), VII. 155; XX. 465—his voyages, X. 470, 471—visits to

COL—COM

Cuba, VII. 565—his discovery of the West Indian Islands, II. 699; and of South America, ib.; of Jamaica, XII. 672; Hayti, XI. 255; Honduras, 609; of the variation of the needle, XIV. 2.
 COLUMBUS (Diego), governor of Jamaica, XII. 672.
 —capital of Ohio, VII. 159; XVI. 490, 491.
 —in Georgia, VII. 159.
 —anatomist, II. 759, 761.
 COLUMELLA (L. J. Moderatus), VII. 159—on irrigation, XII. 621—on the cultivation of the vine, XXI. 882.
 —in botany, V. 135.
 Columelliaceæ, nat. order of plants, V. 198.
 COLUMN, VII. 159—different kinds named from their use, ib.—in architecture, III. 508—Doric, 463, 475, 477—Ionic, 465, 475, 477—Corinthian, 466, 473, 477—considered with reference to architectural composition, 486—building of columns, V. 740—strength of, VI. 250; XX. 758, 771—none found among Assyrian remains, III. 500; reason of this, ib.—construction of wooden, XII. 811—iron columns, their superiority, XX. 779.
 COLUMNARIUM, VII. 160.
 COLUMES, VII. 160; IV. 2.
 Colwith Force, waterfall, XXI. 842.
 COLYBA, or Colybus, VII. 160.
 Colydium, genus of insects, IX. 142.
 Colymbetes, genus of insects, IX. 101.
 Colymbus, genus of birds, XVI. 809.
 COLYTON, town in Devonshire, VII. 160.
 Colyttus, in Athens, IV. 169.
 Colza oil, II. 335; XVI. 495—its advantage for lighthouse lamps, XIII. 480.
 COMA, VII. 160; XVII. 701—death by, 703.
 —BERENICES, constellation, VII. 160; IV. 661.
 COMACCHIO, town in Italy, VII. 160.
 COMANA, in Cappadocia, VII. 160; VI. 223.
 —in Pontus, VII. 160.
 Comarca di Roma, legation, XVII. 243.
 Comaster, genus of zoophytes, XXI. 995.
 Comatula, echinoderms, XXI. 995—fossil, XVII. 98.
 COMAYAGUA, in Central America, VII. 160; XI. 613, 614—plain of, 611.
 COMB, VII. 160.
 —or coomb, a corn measure, VII. 160.
 COMBACONUM, in India, VII. 160.
 COMBAT, VII. 160; VI. 611, 409; XVI. 702.
 Combativeness, XVII. 562.
 COMBE, or Comb, VII. 160.
 —(George), on phrenology, XVII. 557, 559, 561 *et seq.*—on a cause of fallacy in mesmeric experiments, XX. 440.
 COMBER, or Cumber, VII. 160.
 —(Mr), on the produce of wheat in Britain, VII. 380.
 Combermere (Lord), his capture of Bhurtpore, IV. 694.
 COMBINATION, VII. 160—laws of chemical, VI. 439; in definite proportions, 441; by volumes, 447—among workpeople, XIV. 280, 348, 350.
 —in mathematics, VII. 166. See Probability.
 —laws, repeal of the, V. 640—effects of that measure, 643.
 Combinations, in mechanics, XIV. 390, 391—aggregate, 400.
 Combing of wool, XXI. 923, 924.
 Combretaceæ, nat. order of plants, V. 191.
 Combrune (Mr), on brewing, V. 319.
 Combs of bees, IV. 577—their durability, 583—Buffon's theory of the formation of, 578.
 COMBUST, in astronomy, VII. 166.
 COMBUSTION, VII. 166—Lavoisier's theory of, I. 932; modified by Davy, 971—spontaneous, causes of, XIV. 427—electricity developed in, VIII. 567—air necessary to, XVIII. 81—oxygen and air necessary to, XX. 353—products of,

COM—COM

352—of coal, ib.—heat liberated by, 353—chemistry of the combustion of coal, 629—heat arising from that of coal and coke, 630—physical conditions of the complete combustion of coal, 631.
 COMBUSTION, spontaneous, of the human body, VII. 166.
 COMEDY, VII. 166—ancient, VIII. 139—Greek, ib.—middle and new, 140—Italian, 148—French, 156—English, 157 *et seq.*—genteel, 165—of intrigue, ib.—of the fourth period of the English drama, 166—German, 167—of Ariosto, III. 530—of Plautus, XVIII. 2, 3—immoral tendency of, in the time of Charles II., XXI. 171.
 Comephorus, genus of fishes, XII. 306, 307.
 COMERCOLLY, town in Bengal, VII. 166.
 COMET, VII. 167; IV. 4, 75, 94, I. 784, 855—orbis of, IV. 75—their appearance and constitution, 77—account of the most remarkable comets that have appeared during the present century, 94, 95—disturbance of their orbits by the action of the larger planets, 107—just notions of some of the ancients regarding, I. 568—methods for discovering the orbits of, 784—number of, IV. 79—Milne's Essay on, I. 784, n. 1—notions of the Chaldeans respecting, III. 782—Lalande on, XIII. 160—Lambert on, 167—Halley's comet, I. 782, 855; III. 804, 809; IV. 76, 94; its peculiar features, I. 856; table of its returns, ib.—Encke's, IV. 76, 94; I. 856—Biela's, IV. 76, 94; I. 858, 859—Gambart's, ib.—comets of 1811 and 1843, 859—comet of Faye, ib.—steam-boat, XX. 638; X. 650.
 Comfrey, plant, V. 201.
 —prickly, forage plant, II. 329.
 COMINES (Philippe de), VII. 181.
 —town of Belgium, VII. 182.
 Comino, island, XIV. 116.
 COMITATUS, in law, VII. 182.
 COMITIA, Roman assemblies, VII. 182; XIX. 296, 316; in Dublin University, XXI. 488.
 COMITIALIS MORBUS, VII. 184.
 COMMA, VII. 184; XVIII. 685—in music, VII. 184.
 Commagene, province of Syria, XX. 904.
 Commander-in-chief, naval, XVI. 103.
 Commanders, military, choice of, XXI. 702.
 COMMANDERY, VII. 184.
 Commandments (the Ten), VII. 689. See Decalogue.
 Commelynaceæ, nat. order of plants, V. 213.
 COMMENDAM, VII. 184; IV. 647.
 COMMENSURABLE, VII. 184; X. 517—numbers, VII. 184—in power—surds, ib.
 COMMENTARY, VII. 184.
 COMMERCE, VII. 184—history of, ib.—principles of, 192—fluctuations of, in the present age, 199—influence of the cotton-manufacture on, 454—evils of the exclusive system, 455—credit, 487—promoted by the crusades, 533—acts of Parliament for the benefit of, in 1823, V. 636; and in 1825, 643—commercial distress of 1825, ib.—civilisation promoted by, IX. 395—characters of abbreviations in, VI. 419—prejudice against, among the Greeks and Romans, XVIII. 212 and n. 1—beneficial results of, 230—employment of capital in, 236—distinguished from agriculture and manufactures, 246—of Asia, III. 754, 755, 756—England, VIII. 732—Scotland, XIX. 806—France, X. 257—Belgium, IV. 625—Denmark, VII. 748—India, XI. 459—Holland, 584—China, VI. 589—of the Mediterranean, XIV. 470—Sweden, XX. 862—Switzerland, 890—United States, XXI. 426. See the different states, countries, &c.
 —chamber of, in Belgium, IV. 626—Manchester, XIV. 256—Dublin, VIII. 226—Glasgow, X. 654.
 Commercial Docks, London, XIII. 661.
 COMMERCEY, town of France, VII. 201.

COM—COM

COMMEWINA, river in Guiana, VII. 201.
 COMMINATION, VII. 201.
 COMMUNION, VII. 201.
 COMMIRE (John), VII. 201.
 Commissariat department in the British army, III. 664—mismanagement of, in the Crimea, XIX. 506.
 COMMISSARY, VII. 201.
 — COURT, in Scotland, VII. 201.
 COMMISSION AND COMMISSIONER, VII. 201.
 — of bankrupt, VII. 201—in commerce, *ib.*; III. 596—of lunacy, VII. 201—of terrors, 204.
 — MILITARY, VII. 201—prices of, 202—number of officers holding commissions in British army, 204.
 Commissioners for the consolidation of English law, XIII. 273.
 — of national education in Ireland, VIII. 223.
 COMMISSURE, VII. 204.
 COMMITMENT, VII. 204.
 COMMITTEE, VII. 204.
 Commodities, taxes on, XXI. 57, 58—*ad valorem* taxes on, *ib.*—occasion smuggling, *ib.*—customs-duties on, 59—kinds of, that might be charged with export duties, 60—extent to which taxes should be laid on, 69; should vary with the price of, 70.
 COMMODORE, VII. 204, 339; XVI. 103.
 COMMODUS (L. Aurelius), Roman emperor, VII. 204—his reign, XIX. 345.
 COMMON, VII. 204—in grammar, *ib.*; X. 747—arithmetic, VII. 204—place-book, *ib.*—pleas, 205; VIII. 785.
 — in law, VII. 204.
 — law, XIII. 269.
 — PRAYER, VII. 205; XIII. 517.
 — sense, I. 403.
 — terms, in logic, XIII. 569—quantity of, 583—predication through, 584, 585.
 COMMONALTY, VII. 205. See Civil State.
 COMMONER, VII. 205.
 COMMONS (House of), VII. 205; VIII. 768, 770; X. 737; XVII. 289, 293 *et seq.*—clerk of, VI. 764—ventilation of, VII. 670; XXI. 540.
 COMMONTY, in Scotch law, VII. 205.
 COMMONWEALTH, VII. 205—history of England during the, V. 413 *et seq.*—post-office under the, XVIII. 404—decay of the mercantile navy during the, XX. 130.
 COMMOTE, VII. 205.
 COMMUNE, VII. 205.
 COMMUNIBUS LOCIS, VII. 205—*annis*, *ib.*
 Communicants and non-communicants, division of Christians into, I. 509.
 COMMUNICATING, in theology, VII. 205. See Supper of the Lord, Communion.
 COMMUNICATION, VII. 205.
 COMMUNION, VII. 205—service, 206.
 COMMUNIS, in botany, VII. 205.
 COMMUNISM, VII. 206.
 Communists, their mischievous schemes regarding property, XVIII. 228, *n.* 4.
 COMMUNITY, VII. 217—arms of communities, XI. 322. See Corporation.
 Commutation of tithe, XXI. 64.
 COMNENA, VII. 217; III. 213.
 Comnenus (Alexius), VII. 316.
 Como, lake of, VII. 217; XII. 637; XIII. 644.
 — province and city, VII. 217, 226.
 Comonfort (Ignacio), president of the Mexican republic, XIV. 714.
 COMORES, or Comoro Islands, VII. 217; II. 229.
 COMORIN, Cape, VII. 217; XXI. 326.
 Comorn, Hungarian city, XIII. 129.
 COMPACT, VII. 217.
 Companions in arms, VI. 622.
 COMPANY, VII. 217—commercial companies, 218; XVII. 316—land draining, VIII. 131—companies *en commandite*, in France, XVII. 318 and *n.* 3. See Joint-stock Companies.
 COMPARATIVE ANATOMY, VII. 218; III. 74—province of, II. 748—cultivated by Aristotle, 750—revival of, 763—individuals by whom it has been cultivated during the eighteenth century, 768—

COM—COM

Cuvier's labours in, VII. 604, 605; John and William Hunter's, XII. 27, 30. See Animal Kingdom, and the different zoological articles.
 COMPARATIVE DEGREE, VII. 218; X. 775, 790.
 — philology, XVII. 527.
 COMPARISON, VII. 218—in rhetoric, *ib.*—in grammar, X. 775, 790—phrenological faculty of, XVII. 563.
 COMPASS (mariner's), VII. 221; XVI. 12; XX. 27, 121, 124—invention of the, I. 740; III. 706; X. 630; XIV. 1; XVI. 2—action of aurora borealis on, IV. 247—Coulomb on its improvement, VII. 461; one described by him, 462—effects of lightning on, VIII. 600—points of the, X. 482—in globes, 485—discovery of the dip and variation of the needle, XIV. 2, 3; effect of iron on the needle at different degrees of heat, 36—Condamine's description of a variation compass, VII. 230—error of, from attraction of iron in ships, XIV. 9, 90; I. 745, 990—dip of needle, XIV. 57—variation of the needle, I. 990; VII. 692; XIV. 49; XVI. 3, 12, 49—changes in its variation, XIV. 51, 52, 53—form and construction of needle, 78—common and azimuth compasses, 78, 79—variation compass, 80—deviation of the, XVI. 13—compass of proportion, XX. 30—compass observatory, XXI. 926.
 COMPASS-DIALS, VII. 221.
 COMPASSES, VII. 221—various kinds of, *ib.*—tangent compass, I. 983—to describe an ellipsis by, XX. 726.
 Compassionate fund, XVI. 118.
 Compensation reservoir, Pentland hills, III. 337.
 Compensation-balance of watches, VII. 29—31—compensation pendulums, XVII. 387.
 COMPIEGNE, in France, VII. 222.
 COMPITALIA, Roman festival, VII. 222.
 COMPLEMENT, VII. 222; XXI. 338.
 COMPLEX, VII. 222.
 COMPLEXION, VII. 222—original of the human species, II. 121—of the American races, 677—of the Japanese, XII. 690.
 COMPLINE, VII. 225.
 COMPLUTENSIS POLYGLOT, VII. 225; IV. 697; XVIII. 266; XIX. 837.
 COMPLUVIUM, VII. 225; III. 472.
 Compositae, nat. order of plants, V. 196—region of the arborescent, 228; XVII. 629.
 COMPOSITE, VII. 225—numbers, *ib.*—order of architecture, *ib.*; III. 451, 469, 475, 477, 487.
 COMPOSITION, VII. 225—of ideas—in grammar—in law, *ib.*; II. 416—in logic, VII. 225—in music, 226; XV. 739—in the fine arts, VII. 226—in printing, *ib.*; XVIII. 539—in architecture, III. 485—of motion, VIII. 333—of pressures, 335—of forces, VI. 254; VIII. 334.
 — (Literary), VII. 225—Condillac on, 236—history considered as a form of, XI. 545—Playfair's habits of, XVIII. 7—poetical diction, 93—letter-writing, 327.
 Compositor, XVIII. 539, 541 and *n.* 2, 543.
 COMPOST, VII. 226; II. 302.
 COMPOSTELLA (St James of), order of knighthood, VII. 226; XIX. 628.
 — town in Spain, VII. 226; XIX. 627.
 — town in Mexico, VII. 226.
 COMPOUND, VII. 226—motion, numbers, ratio, *ib.*
 — INTEREST, VII. 226; XII. 432—tables of increase of L.1 at, III. 253, 254; XII. 434—present value of L.1 at, 435.
 COMPREHENSION, VII. 226—in rhetoric, *ib.*—scheme of, VII. 226; V. 429.
 Compressibility, of water, II. 102; XII. 77; I. 976—of air, XVIII. 28, 51 *et seq.*—is a property of all bodies, XX. 751—important consequences of this property, 764.
 Compression, failure of timber from, XX. 779.

COM—CON

Compte (Auguste), his system of positivism, VII. 211; XVIII. 401—on law, as ultimately depending on the same causes as customary law, XIII. 260—on social science, 263—on the limits of legislative action, 264—meaning attached to the word *physics* by, XVII. 647.
 COMPTON (Henry), bishop of London, VII. 226.
 — (SPENCER-JOSHUA-ABOTNE), Marquis of Northampton, VII. 226.
 COMPTONITE, mineral, VII. 226; XV. 75.
 Comptroller of the household, XI. 774.
 Compurgation, ordeal by, XIII. 22.
 COMPURGATOR, VII. 226.
 Comrie, in Perthshire, XVII. 457—earthquakes at, 616.
 COMUM, city of Gaul, VII. 226.
 COMUS, VII. 227.
 Comyn (John), XIX. 755.
 CONANT (Dr John), VII. 227.
 CONATUS, VII. 227.
 CONCA (Sebastiano), VII. 227.
 CONCAN, in India, VII. 227.
 CONCATENATION, VII. 227.
 CONCAVE, VII. 227, 338.
 CONCENTAINA, town in Spain, VII. 228.
 CONCENTRATION, VII. 228.
 Concentrativeness, XVII. 562.
 CONCENTRIC, VII. 228; VIII. 371—lenses, XIV. 770.
 CONCEPCION, in Chile, VII. 228; VI. 542, 543, 547.
 Concepticle, in botany, V. 147.
 CONCEPTION, VII. 228—in physiology, *ib.*—in metaphysics, XIV. 587—symbolical and intuitive, 589.
 — (Immaculate), of the virgin, VII. 228; XII. 365.
 Concepts, in logic, the law of, XIII. 582—concept proper, XIV. 589—concept of God, XXI. 184.
 Conceptualism, XVI. 284.
 CONCERT, VII. 228—of princes, V. 540.
 Conchifera, extinct genera of, XVII. 115.
 Conchiosaurus, fossil reptiles, XVII. 144.
 CONCHITE, fossil shell, VII. 228.
 CONCHOID, VII. 228—construction of the, III. 143—of Nicomedes, 143; X. 501, 544.
 CONCHOLOGY, VII. 228; XV. 319. See Mollusca, Palaeontology.
 Conchorynchus, fossil mollusks, XVII. 111, 113.
 CONCHYLIA, VII. 228.
 CONCIATOR, VII. 228.
 Conclamatio, X. 344.
 CONCLAVE, VII. 228.
 CONCLUSION, in logic, VII. 228.
 CONCORD, in New Hampshire, North America, VII. 228; XVI. 174.
 — town and river in Massachusetts, VII. 228; XIV. 340—first collision with the British forces at, in 1775, XXI. 749.
 — temple of, in Rome, XIX. 359.
 CONCORDANCE, verbal index to the Bible, VII. 228—Calasio's, VI. 66—Cruden's, VII. 523.
 CONCORDAT, VII. 228; X. 267—between Pius VII. and Ferdinand I., XX. 255.
 CONCORDIA, goddess, VII. 228.
 Concours, method of mixed examinations among the French, IX. 425.
 CONCRETE, VII. 229, 329—definition, history, and use of, XX. 721.
 CONCRETION, VII. 229—in pathology, XVII. 691—in the duct of animals, XXI. 564.
 CONCUBINAGE, VII. 229.
 CONDAINE (Charles Marie de la), VII. 229; I. 772, 773—his measurement of the length of a degree, IX. 549—experiments on sound, II. 104—on the Amazon, 650.
 CONDAPILLY, town in Hindustan, VII. 231.
 CONDÉ (Louis de Bourbon, Prince of), VII. 231; X. 34.
 — town of France, VII. 233.
 — SUR NOIREAU, VII. 233.
 CONDENSATION, VII. 233—in steam-engines, I. 868—of vapours, VII. 39, see Evaporation—of water, XIV. 646—of gas, X. 415—of air, XVIII. 30.

CON—CON

CONDENSER, VII. 233—of electricity, VIII. 614—in distillation, 49—of steam-engine, I. 868; XX. 576, 589 *et seq.*, 651—best vacuum for, 655—contents of, *ib.*
 Condensing steam-engines, XX. 602.
 CONDER, VII. 233.
 CONDILLAC (E. Bonnot de), VII. 233—his erroneous notions of vision, I. 164—on the origin of human knowledge, 173, *n.* 1—his commentary on Locke, *ib.*, 379—causes of the popularity of his works, *ib.*—commonly most successful in describing mental phenomena when he follows Locke, 174—most valuable part of his works, *ib.*—the radical error of his system, 176—influence of his theories in misleading his contemporaries, 177—M. de Bonald on his merits and style, 177, *n.* 1—on sensation, 380—omits to distinguish between the percipient and emotive part of human nature, *ib.*—on association of ideas, XIV. 596—on the deaf and dumb, VII. 676—his merits as a philosopher, I. 174 *et seq.*
 Condiments, IX. 765; VIII. 17.
 CONDITIONAL, VII. 237—conjunctions—prepositions—syllogism, *ib.*
 CONDOM, town of France, VII. 237.
 CONDOR, bird, VII. 238; XVI. 738; XVII. 633—in Chile, VI. 549—in Ecuador, VIII. 387—among the Himalayas, XI. 456—in Peru, XVII. 473—in La Plata, 778—in Patagonia, 335.
 Condorcet (Jose Gabriel), IV. 831.
 CONDORCET (M. - J. - A. - Nicolas-Caritat, Marquis of), VII. 238; X. 83—on religious Machiavelism, I. 23—on Descartes, Bacon, and Galileo, 56—his intimacy with Cabanis, VI. 44—constitution framed by, X. 79—on Duhamel's style, VIII. 233—on the construction of lenses, XIII. 472—on probability, XVIII. 590.
 CONDOTTIERI, VII. 239; XII. 650.
 CONDRIEU, French town, VII. 239.
 Conduction, electrical, VIII. 539; XXI. 621, 622—influence of heat in promoting, VIII. 540, 541—Faraday's new law of, 533, 542; I. 978—Ohm's law of, 982—principal laws of, 983.
 — of heat, I. 946. See Heat.
 — nervous, theory of, XVIII. 653.
 CONDUCTORS OF ELECTRICITY, VII. 239; VIII. 540, 608, 609; XXI. 95, 650—electrical resistance of, 96.
 Conduit-pipes, motion of water in, XII. 131.
 Condurrite, mineral, XV. 117.
 Condyles, III. 34.
 CONDYLURA, in zoology, VII. 239; XIV. 152.
 Condyl's deodorizing fluid, XIX. 621.
 CONE, VII. 239, 283; X. 540, 558—development of the curve surface of, 492; XII. 807; XX. 727—speed-cones, in mechanics, XIV. 398—mensuration of, 513—its use in masonry, XX. 726—sections of, 727. See Conic Sections.
 CONEGLIANO, Italian city, VII. 239.
 Coneine, VI. 518.
 Cones of eruption in volcanoes, XXI. 604—craterless cones, *ib.*—coneless craters, *ib.*—new cones, rapid formation of, 605.
 — in botany, V. 115, 139.
 Coney-fish, XII. 269.
 CONFARREATIO, VII. 239.
 Confectionary, adulterations of, IX. 770.
 Confederacy, plundering, at Bombay, V. 2.
 CONFEDERATION OF THE RHINE, VII. 239; X. 142, 580.
 — Swiss, IX. 498; XX. 884, 885—Germanic, X. 597; IX. 400.
 Confervaceæ, sub-order of algae, V. 218—reproductive organs of, 147.
 CONFERVÆ, a division of algae, VII. 240; V. 68—in mineral waters, XV. 88, *n.*
 CONFESSION, VII. 240—popish doctrine of, XVIII. 336.
 CONFESSION OF FAITH, VII. 240; I. 502—rejected by the Independents, XII. 370—of Augsburg, IV. 240; XIII. 735;

CON—CON

XVIII. 823—Westminster Confession of Faith, XIX. 781; its doctrines on predestination, XVIII. 478—of the Druses, XX. 908.
 CONFESSIONAL, VII. 241.
 CONFESSOR, VII. 241.
 CONFIGURATION, VII. 241.
 CONFIRMATION, in an ecclesiastical sense, VII. 241.
 CONFLAGRATION, VII. 241—of the world, *ib.* See Fire.
 CONFOLENS, town of France, VII. 241.
 CONFORMITY, VII. 241.
 CONFUCIUS, VII. 241—his works, VI. 560—miraculous birth of, XV. 761.
 CONFUSION OF TONGUES, VII. 245. See Tongues, Babel.
 CONGÉ D'ELIRE, VII. 245; IV. 733.
 CONGELATION, VII. 245, 103—artificial, 104, 106, 107, 545; XIII. 345; XI. 275—of water, 269—of mercury, VII. 107; VI. 352—freezing mixtures, VII. 102; VI. 353; XI. 275—Kirwan's method of calculating the point of perpetual, VI. 772—in hot climates, owing to radiation, IX. 415—electricity of, VIII. 566. See Cold.
 CONGER, species of eel, VII. 245; IX. 764; XII. 232.
 CONGERIDÆ, family of fishes, XII. 232.
 CONGERMURANA, genus of fishes, XII. 232.
 CONGESTION, XVII. 689, 691.
 CONGIUS, ancient liquid measure, VII. 245.
 CONGLETON, town in Cheshire, VII. 245.—viaduct, XVIII. 764.
 CONGLIANI (P.), his work on insects, IX. 21.
 Conglomerate rock, XV. 141.
 CONGO, county in Africa, VII. 245; II. 227—ants in, III. 263.—or Zaire, African river, VII. 247; II. 214—Captain Tuckey's expedition to, 210; VII. 247.
 CONGOON, Persian town, VII. 247.
 CONGOSOCO gold-mines, V. 299.
 Congou, tea, XXI. 86.
 CONGREGATION, VII. 247—lords of the, XIX. 779.
 CONGREGATIONALISTS, VII. 247; IX. 394—their idea of ordination, XVI. 704.
 CONGRESS, VII. 247; XXI. 698—of the United States, 435; powers of, 429; salaries of the members, *ib.*
 CONGREVE (William), VII. 247; XXI. 173, 518, 519—his merits as a dramatist, VIII. 162, 163—his character of Dryden, 203—his dramatic reading, XXI. 172—his reply to Collier, 516.—(Sir WILLIAM), VII. 248—inventor of congreve rockets, *ib.*; his right to be regarded as their inventor denied, III. 698—his improvements of rockets, *ib.*—first used by him in war, 699.—matches, XIV. 352.
 CONGRUITY, VII. 248.
 CONI, or Cuneo, in Italy, VII. 248.
 CONIA, the poisonous principle of hemlock, VII. 248; XIV. 439; XI. 311; XVIII. 130.
 Coniasaurus, fossil reptile, XVII. 152.
 CONIC SECTIONS, VII. 249—parabola, 252—ellipse, 258—hyperbola, 269—cone and its sections, 283—curvature of, 285—areas of, 289—arches from, XX. 725—Apollonius on, III. 300, 301—Condamine on, VII. 230—connection of the doctrines of astronomy with, X. 505—Dr R. Simson on, XX. 300.
 Conical barometer, IV. 454.—refraction, I. 918. See Refraction.
 Conicera, genus of insects, IX. 258.
 CONICHTHYODONTES, VII. 294.
 Conidae, fossil mollusks, XVII. 110.
 CONIFERÆ, nat. order of plants, VII. 294; V. 209—embryogeny in, 157—fossil, 234, 235, 237—turpentine and rosin from, XIX. 88—oil of turpentine and of juniper from, XVI. 496.
 CONIROSTRES, VII. 294; XVI. 759.
 Conisburgh Castle, Yorkshire, XXI. 959.
 Coniston rocks, XV. 197, 198; XXI. 841.
 Conistonite, mineral, XV. 125.

CON—CON

Conium maculatum, hemlock, V. 195; XI. 311; XIV. 438; XVII. 702.
 CONJEVERAM, town in India, VII. 294; XI. 485.
 CONJUGATE DIAMETER, VII. 294.
 CONJUGATION, in grammar, VII. 294.
 CONJUNCTION, in astronomy, VII. 294.—in grammar, VII. 294; X. 779, 791—in Egyptian grammar, XI. 425.
 CONJURATION, VII. 294.
 Connaraceæ, nat. order of plants, V. 190.
 CONNAUGHT, VII. 294.
 CONNECTICUT, state, VII. 294; XXI. 419—first settlers in, 433—wines of, 888.—river, VII. 296, 294; XIV. 340; XVI. 173—lake, *ib.*
 Connecting-rod, in steam-engines, XX. 591, 646.
 Connectives, in grammar, X. 791.
 Connemara, in Ireland, X. 388, 389.
 CONNOISSEUR, VII. 296.
 CONNOR (Bernard), VII. 296.—bishopric of, III. 283.
 Conocardium, genus of mollusks, XV. 349—fossil, XVII. 107.
 Conoclypeus, fossil echinoidea, XVII. 100.
 Conodon, genus of fishes, XII. 285.
 Conodonts, fossils, XVII. 115.
 Conodus, genus of fossil fishes, XII. 336.
 CONOID, in geometry, VII. 296.
 Conolly (Dr), his mode of treating the insane, XIV. 528.
 CONON, Athenian general, VII. 296; IV. 208.—of Samos, VII. 296; III. 790.—river, XVI. 87; XIX. 425—pearls in, 426.
 Conopalpus, genus of insects, IX. 132.
 Conophaga, genus of birds, XVI. 749.
 CONOPS, genus of insects, VII. 296; IX. 244.
 Conopsariæ, family of insects, IX. 244.
 Conorbis, fossil mollusks, XVII. 110.
 Conotenthis, fossil cuttle-fish, XVII. 114.
 Conovulus, genus of mollusks, XV. 375.
 CONQUEST, in law, VII. 296.
 CONRAD II., Emperor of Germany, VII. 296; X. 579.—III., Emperor of Germany, VII. 296—second crusade headed by, 525.—or Conradin, VII. 296; XX. 257, 258.
 CONSANGUINITY, VII. 296.
 CONSCIENCE, VII. 297; XV. 558—Aristotle's view of, III. 564—Hutcheson's definition of, I. 364; first called by him a *moral sense*, *ib.*—formation of, from various elements, 424—regarded as the foundation of moral distinctions, XV. 544—proof of the existence of God from the operations of, XXI. 187. See Ethical Philosophy.
 Conscientiousness, sentiment of, XVII. 563.
 CONSCIOUSNESS, VII. 297—presentative or intuitive, XIV. 560—phenomena of, XIII. 567; XIV. 556—forms of, 561—matter of intuitive, 562—of personality, 584—representative or reflective, *ib.*—philosophy of the realities of, 603—theories of the real not founded on, 611—the real as given in, 613—the modes of, not cognisable by logic, XIII. 567—original data of, violated by Pantheism, XVII. 237—a universal law of mind, XIX. 111—primary distributions of the elementary modes of, *ib.*
 CONSCRIPT, VII. 297.
 CONSCRIPTION, VII. 297—French code of, *ib.*; X. 271—under Napoleon I., III. 642 and *n.* 2.
 CONSECRATION, VII. 298—of bishops, IV. 733.
 Consent, as constituting marriage in Scotland, XII. 51.
 CONSENTES, VII. 298; VIII. 28.
 CONSEQUENCE, in logic, VII. 298.
 Consequent, in geometry, X. 517.
 Conservatio virium vivarum, VIII. 354.
 CONSERVATORY, VII. 298; XI. 755—conservatory plants, 757.—in music, VII. 298.—of Arts and Measures, Paris, XXI. 322.

CON—CON

CONSISTENTES, VII. 298.
 CONSISTORY, VII. 298—college of Cardinals at Rome, *ib.*—court, VII. 298.—in the reformed church, VII. 298; XVIII. 485.
 CONSOLE, in architecture, VII. 298; III. 508.
 CONSOLS, VII. 298; VIII. 752.
 CONSONANCE, in music, VII. 299.
 CONSONANT, VII. 299—consonants in the ancient Egyptian language, XI. 415—pronunciation of, XVII. 679—in short hand writing, XX. 676.
 CONSPIRACY—CONSPIRATOR, VII. 299.
 CONSTABLE, VII. 299—of France, *ib.*—Lord High Constable of England, *ib.*—of Scotland, *ib.*—inferior constables, *ib.*—(ARCHIBALD), VII. 299—Sir Walter Scott's connection with, XIX. 821, 822.—(JOHN), landscape painter, VII. 299.
 Constabulary force of Ireland, XII. 525; XVIII. 206, 207—Constabulary Act of 1836, 206.
 CONSTANCE, VII. 300.—Lake of, VII. 300; X. 585; XX. 889; XXI. 242—influx of the Rhine, XIX. 144—climate, XXI. 938—wines from the banks of, *ib.*—fish, *ib.*
 Constans, Roman emperor, VII. 303—his visit to Britain, XIX. 742.
 CONSTANT (Benjamin), VII. 300; X. 193.—(C. F.), his work on insects, IX. 21.
 CONSTANTIA, VII. 300.—wine, XXI. 887; alcohol in, 889.
 CONSTANTINA, or Constantine, in Algiers, VII. 300; VI. 734; II. 574, 575—town taken by General Valée, 575.—wife of Gallus Cæsar, VII. 304.
 CONSTANTINE THE GREAT, VII. 300, 302—reign of, XIX. 352—his vision, *ib.*—his proceedings in Britain, V. 380—his improvement of Byzantium, VI. 43—his library, XIII. 385—state of Jerusalem and the Jews under, XII. 734, 776—state of art in his reign, XVII. 58—Spain under, XX. 459—probably born at York, XXI. 955.—of Carthage, XIV. 458.—copronymus, XII. 642.—II., Roman emperor, VII. 303.—Russian grand duke, XIX. 492.—Scottish kings so named, XIX. 745.—VII., emperor of the East, VII. 300.
 CONSTANTINOPLE, VII. 300—aqueduct near, III. 334—supply of water to, 335—dome of the church of St Sophia at, 402, 411—military establishments in, 659—taken by the Latins in 1204, VII. 318—great fire at, in the fifth century, 311; and in 1203, 317—unsuccessful British expedition against, V. 603—bazaars of, IV. 525—taken and plundered by the crusaders, VII. 318, 526; and by the Turks, 321; XXI. 368—era of, VI. 670—commerce of, VII. 186; XXI. 384—taken by the Turks in 1453, VII. 321—rise of ecclesiastical power at, XI. 33—obelisks at, 387 and *n.* 2, 3—libraries, XIII. 385, 428—plague at, XVII. 748, 749—foundation of, XIX. 353—Russian expeditions against, 469, 470—ancient sculpture once preserved at, 859—revolution at, in 1808, XXI. 373—schools or colleges at, 381—press and newspapers, 383—public libraries, *ib.*—astronomical instruments in the mosques of, *ib.*—manufactures, *ib.*—climate, 377—shipping, 384—introduction of the silk-worm at, XX. 286.
 CONSTANTINOPOLITAN HISTORY, VII. 302.
 Constantius, Roman emperor, VII. 303—reign of, XIX. 351—his war with the Persians, VII. 307.—(Chlorus), XIX. 350—his death at York, V. 380; XXI. 955.
 CONSTELLATION, VII. 322; IV. 12, 79—Dupuis on the constellations, VIII. 263.
 Constituent Assembly, in France, X. 64, 65; XXI. 11.
 CONSTITUTION, VII. 322—of a country,

CON—CON

VIII. 756—the British, 758 *et seq.*—French, of 1791, X. 62; of 1795, 95—German, of 1848, 581—Hungarian, XII. 15—of the United States, XXI. 437—of the different states forming the Union, 431—of universities, 450 *et seq.*
 Constitution, propositions of, in logic, XIII. 587, 589, 606.
 CONSTITUTIONS (Apostolical), VII. 322.
 Constriction, action of the muscles in, III. 40.
 CONSTRUCTOR muscles, VII. 322; III. 39.
 CONSTRUCTION, VII. 322; I. 874—in architecture, III. 490—in navigation, XVI. 14—of harbours, XI. 221—of ships, XVI. 96—use of iron in, XII. 570—of walls, XX. 721.
 Constructiveness, XVII. 562.
 CONSUALIA, Roman festival, VII. 333.
 CONSUBSTANTIAL, VII. 333.
 CONSUBSTANTIATION, VII. 333; XIII. 740.
 CONSUEGRA, Spanish town, VII. 333.
 CONSUL, mercantile, VII. 335—stations of British consuls, with their salaries, 336—vice-consuls, 335.—Roman, VII. 333; XIX. 298, 316—mode of investing with the power of dictator, 317—consular armies, III. 630, *n.* 3—consular government in France, X. 116.
 Consumption, a disease. See Phthisis.—of wealth, XVIII. 256—of the precious metals, 465—of wines, XXI. 891.
 CONTAGION, VII. 337—dependence of the plague on, XVII. 750—has been supposed to originate from animalcules, XXI. 975.
 CONTARINI (Andrea), VII. 337.—(Nic.), his works on insects, IX. 21.
 Contempt of Court, IV. 185.
 Conti (Abbe), IX. 673.
 Continent, X. 483; XVII. 571—mean elevation of continents, 590.
 Continental missions to foreign countries, XV. 270; sum of money expended on, 272.—system of Napoleon, X. 128, 144.—universities, XXI. 492.
 CONTINGENT, VII. 337.
 CONTINUED BASS, in music, VII. 337.
 Continuity, law of, first mentioned by Galileo in reasoning on motion, I. 592.
 Contorsions of beds, in geology, XV. 169.
 CONTOURNIATED, VII. 337.
 CONTRABAND, VII. 337—articles contraband of war, XVI. 156.
 Contractility of muscles, II. 822; XVII. 652, 670, 671—of leaves, V. 108.
 Contracts, in law, XIII. 257—in life assurance, XII. 393, 407—duty of keeping, faithfully, XV. 567.
 Contradiction, law of, in logic, XIII. 573, *n.* 2.
 Contraposition, inference by, XIII. 602.
 CONTRE, in heraldry, VII. 337.
 CONTRITION, VII. 337.
 CONTROL, VII. 337.
 CONTROLLER, VII. 337.
 Conularia, fossil mollusks, XVII. 109, 111.
 Conurus, genus of birds, XVI. 781.
 Conus, genus of mollusks, XV. 368, 385.
 CONVENTICLE, VII. 337—act of parliament against, in 1670, V. 428.
 CONVENTION, VII. 338—French national, X. 71—American, of 1787, XXI. 438.—of Estates, VII. 338.
 Convents, in France, X. 267—in Jerusalem, XII. 745, 747.
 CONVENTUAL, VII. 338.
 CONVENTUS JURIDICI, VII. 338.
 CONVERGING, or convergent lines and series, VII. 338.
 CONVERSANO, city of Naples, VII. 338.
 Conversations, published collections of, II. 737.
 CONVERSE, in mathematics, VII. 338.
 Conversi, Jews converted to Christianity, VII. 338.
 Conversion, in theology, XXI. 218—puitanical notions of, VIII. 415.—in logic, XIII. 605, 606.—in calico printing, VIII. 317.
 CONVERT, VII. 338.

CON—COO

CONVEX and Convexity, VII. 338, 227.
 CONVEYANCING, VII. 338.
 CONVICTS, in New South Wales, IV. 271; XVIII. 576, 577, 579—the assignment system, 577, 578—female, 585—discharged, *ib.*—agitation concerning, at the Cape of Good Hope in 1849, X. 713—in Norfolk island, XVI. 291; Tasmania, XXI. 30, 33. See Prison.
 CONVOCATION, VII. 338; VIII. 743, 766—in universities, XXI. 457, 467, 471.
 CONVOLUTION, VII. 338.
 CONVOLUTIONS of the brain, in man, III. 52—in brutes, 104—their relation to the intellect of animals, 176.
 CONVULVACEÆ, nat. order of plants, V. 201.
 CONVOY, VII. 339—order of, at sea, XXI. 721.
 CONWAY, in Wales, VII. 339; VI. 55—tubular bridge, XII. 609—castle of, II. 28. See Aberconway.
 — river, VI. 54; VII. 735—vale of, *ib.*
 — (General), his motion for discontinuing the American war, V. 499.
 COOCH BAHAR, in Hindustan, VII. 339.
 COOK (Capt. James), VII. 339—his voyages, X. 475; IV. 419—his survey of the Aleutian islands, II. 465—on the island of Unalashka, 465—his success in preserving the health of his crews, XIX. 602—on New Holland, IV. 253; New Guinea, 262; New Caledonia, 266; New Zealand, *ib.*; Kerguelan's Land, 268—his visit to the Friendly Islands, XVIII. 276; to the Harvey and Society Islands, 278, 279—his arctic and antarctic voyages, 170, 181.
 — (Lieut.), his life-buoy, XIII. 448.
 — (Colonel), on hounds and hunting, XI. 765 *et seq.*; XII. 35 *et seq.*
 — (Mr.), his life-raft, XIII. 499.
 — county in Australia, IV. 278, 282.
 COOKE (Sir Anthony), VII. 341.
 — (Fothergill), his share in the introduction of the electrical telegraph, I. 986, *n.* 2.
 — (G. Frederick), actor, XXI. 176.
 — and Wheatstone's telegraphic system, XXI. 100, 111.
 COOKERY, different kinds of, IX. 765—its importance, VIII. 25—Krunitz on, 26—its influence on health, XIV. 440; XIX. 611—David Hume's humorous account of his proficiency in, XII. 8, *n.*
 COOKS, diseases of, XIV. 443.
 COOKSTOWN, in Ireland, VII. 341; XXI. 408, 409.
 COOLERS, Egyptian, VII. 101.
 COOLIES, in Gujerat, XI. 91, 92, 466—in Jamaica, XII. 677.
 COOLING, law of, I. 945, 952—Dulong and Petit's correction of the Newtonian law of, *ib.*—velocity of, not simply as the excess of heat, 953—effect of contact of air on the rate of, *ib.*
 COOMASSIE, in Africa, VII. 341; III. 725.
 COOMHOLA grit series of rocks, XV. 201.
 COOMTA, in Hindustan, VII. 341.
 COONIA, XI. 778.
 COONOR, in Hindustan, VII. 341.
 COOPANG, town in Timor, XXI. 281.
 COOPER, VII. 341—cooperage at Deptford, VIII. 80.
 — (ANTONY ASHLEY), first earl of Shaftesbury, VII. 342—member of the Cabal administration, V. 425—prosecuted by Charles II. 431—his flight to Amsterdam, and death, 433.
 — (ANTHONY ASHLEY), third earl of Shaftesbury, VII. 342—on Locke's theory of innate ideas, I. 118; XIV. 601, *n.* 4—his Characteristics, I. 348—his merits and defects as a writer, *ib.*, 349—his Moralists and Inquiry concerning Virtue, 349—his ethical views, 350—on the relation of religion to morality, 150—on beauty, IV. 538—on our approval of what is right, and disapproval of what is wrong, XV. 559—on Bishop Burnet, V. 792, 793—on Shakspeare's style, XX. 72.

COO—COP

COOPER (Sir Astley), VII. 343—his experiments on digestion, VIII. 21.
 — (JAMES FENIMORE), American novelist, VII. 344—character of his novels, XIX. 281.
 — (JOHN GILBERT), VII. 344.
 — (SAMUEL), miniature painter, VII. 344; XVII. 77.
 — (SAMUEL), F.R.S., VII. 344.
 — or Couper (THOMAS), bishop, VII. 344.
 Cooper's catalogue of stars, IV. 95.
 Co-ordinates, in algebra, II. 545.
 — in geometry, X. 543—transformation of, 547, 559—solid co-ordinate geometry, 555.
 COORG, in Hindustan, VII. 344.
 COOTE (Sir Eyre), VII. 345; XI. 485, 493 *et seq.*
 — (Sir Charles), XX. 331—his sanguinary proceedings in Ireland, XII. 482.
 COOTEHILL, town in Ireland, VII. 345.
 COOTS, birds, XVI. 808.
 COPAE, town of Boeotia, VII. 345.
 COPAIBA, or Balsam of Copaiva, VII. 345; V. 190; VI. 518.
 COPAIS, lake in Boeotia, VII. 345; XI. 12.
 COPAL, VII. 345; XIX. 88—fossil, XV. 124—copal varnish, XXI. 528. See Varnish.
 Copaline, XV. 124.
 Copan, ruins of, II. 697.
 COPARCENARY, VII. 346.
 COPARCENERS, VII. 346.
 COPE, VII. 346. See Copeing.
 — (Sir John), defeated by Prince Charles at Prestonpans, V. 460; XVIII. 510.
 COPENHAGEN, VII. 346—Royal Academy of Sciences at, II. 66—port of, IV. 404—attacked by the British in 1801, V. 580; VII. 742; X. 120; XVI. 137; and in 1807, V. 602; VII. 742; X. 148—besieged by the Swedes in 1659, VII. 740; XX. 852; and by Charles XII., VII. 741; XX. 853—treaty of, VII. 740—mean annual temperature of, 746—railways connected with, 748—University of, 750; XXI. 492—literature of, VII. 750—naval arsenal, VIII. 79—libraries at, XIII. 426—Royal Society of Northern Antiquarians at, XX. 118.
 COPENNICAN SYSTEM, VII. 348, 349; IV. 54—its effects on all branches of philosophy, I. 20—fully established by Kepler and Galileo, 608—represented as contrary to Scripture, X. 377.
 COPENNICUS (Nicolas), VII. 348; I. 600; XVIII. 158—his discovery of the true theory of the planetary motions, I. 20—publication and reception of his *Astronomia Instaurata*, 601; III. 797—reference to gravitation in his writings, I. 673; IV. 220—his astronomical discoveries, III. 797—his planetary system, IV. 54—his works, VII. 350—epitaph on, IX. 283.
 COPHTI, Cophts, or Copts, VII. 350; II. 218; VIII. 449.
 COPHTIC, or Coptic language, VII. 350; VIII. 441; XI. 273; XIII. 210, 218—alphabet, II. 607, 615; XI. 412—bibles, IV. 700; XIX. 839—identity of, with the language of ancient Egypt, XI. 374, 410—characteristics of, 374—Coptic letters unknown to Greek and Latin, 413.
 — LITURGIES, VII. 350.
 Copiapite, mineral, XV. 97.
 COPIAPO, in Chile, VII. 350—mines of, VI. 548; XV. 235; XVII. 622—climate of, VI. 544.
 COPIATA, VII. 350.
 Copeing, in architecture, III. 508—of walls, V. 736, 739; XI. 700.
 Copland (Prof.), his alleged introduction into Britain of the use of chlorine in bleaching, IV. 785.
 COPPER, VII. 350; VI. 496; XV. 66—native, 114, 238—annealing of, III. 219—its use in assaying, 770—its compounds with zinc and tin, V. 277—sheathing of ships with, 519; VII. 672;

COP—COR

XVI. 96; XX. 174; XXI. 635—for the fastenings of ships, XX. 174—sulphate of, rings from, XXI. 633—how to ascertain its purity in coins, II. 155—protects wood in sea-water from the attacks of *Limnoria terebrans*, VII. 542—quantity of, manufactured at Portsmouth, VIII. 83—black oxide of, used as a mordant, 280—engraving on, 799—value of imports of, 734—used to give a green colour to preserves, IX. 770—specific gravity of, XII. 88—magnetism of, XIV. 27—its poisonous quality, 433—culinary utensils of, 440—blue copper, XV. 102—variegated or purple, 117—gray, 120—in sea-water, XVII. 572, 574—distribution of, 621—as a covering for roofs, XIX. 374—cohesion and strength of, XX. 756—decays when in contact with iron, 179. See Copper-mines, Copperplates.
 Copper, black, XV. 112.
 — mines, XV. 238 *et seq.*—in Anglesea, III. 146—Australia, IV. 295; XV. 238—Scotland, XIX. 790—in Caernarvonshire, VI. 54—Chile, 548—Cork, VII. 371—Cornwall, 407; XV. 239—Cuba, VII. 566—Cumberland, 577—England, VIII. 726—Europe, IX. 386—Nepaul, XVI. 143—Hindustan, XI. 457—Hungary, XII. 17—of Moniquira, IV. 809—Ireland, XII. 506—Japan, 689—Michigan, XIV. 739—Russia, XIX. 517—Sweden, XX. 862—Switzerland, 889—Waterford, XXI. 769. See the different countries, paragraph on minerals.
 — money, XV. 418.
 Copper-blende, XV. 120.
 Copper-glance, XV. 118.
 Copper-green, XV. 102.
 Copper-mica, XV. 103.
 Copper-nickel, XV. 116.
 Copper-ores, red, XV. 112—gray, 120.
 Copper-powder, for bronzing, V. 677.
 Copper-pyrites, VI. 496; XV. 116.
 Copper-salts, XV. 102.
 COPPER-SMELTING, VII. 351—at Swansea, XX. 844.
 COPPERAS, VII. 354; XV. 97—a preventive of dry rot, VIII. 212. See Iron (sulphate of).
 Copperdiaspore, mineral, XV. 103.
 Coppermine River, X. 473; XI. 791; XVIII. 169.
 Copperplates, printing from, VI. 325; XVIII. 520—ink for printing with, XII. 384—multiplication of by voltaic electricity, XXI. 636.
 COPPICE, or copse, VII. 354; XVII. 760.
 Copris, genus of insects, IX. 120.
 COPROLITE, VII. 354—composition of, II. 416—use of, in forming manures, 300, 415.
 Coprophagi, section of insects, IX. 118.
 Coprophilus, genus of insects, IX. 104.
 Coptic language. See Cophtic.
 CORROS, ancient town of the Thebais, VII. 354.
 Copts. See Cophtic.
 COPY, VII. 354.
 COPYHOLD, VII. 354.
 Copying machines, XIV. 415.
 Copyists of books, IV. 706.
 COPYRIGHT, VII. 355; XVIII. 505—attempts to obtain an international law of, with America, V. 32—sums paid for the copyright of dramatic pieces, XXI. 172, 173.
 — in the Arts and Designs, VII. 362.
 — in designs for manufactures, VII. 362.
 Coquebert (A. J.), his works on insects, IX. 8.
 COQUES (Gonzalez), VII. 362.
 Coquet, river, XVI. 87.
 Coquimbite, mineral, XV. 97.
 COQUIMBO, in Chile, VII. 362; VI. 548, 547—terraces round the bay of, 542—earthquake at, in 1849, 543—climate, 544—mines near, 548.
 COR CAROLI—Hydræ—Leonis, VII. 362.
 CORA, city of Latium, VII. 362—temple at, III. 444, 476.

COR—COR

CORACESIUM, fortress in Cilicia, VII. 362.
 CORACHIE, VII. 362. See Kurrachee.
 Coracias, genus of birds, XVI. 765.
 Coracite, mineral, XV. 111.
 CORACLE, small kind of boat, VII. 363; XV. 499; XX. 117.
 CORAH, or Korah, in Hindustan, VII. 363.
 CORAL, VII. 363; XX. 247—manufactures of, at Marseilles, XIV. 316—specific gravity of, XII. 88—fossil corals, XVII. 96—principal recent works on corals, XXI. 1004, *n.* 1.
 — islands and reefs, XV. 143, 217; XVII. 583; XVIII. 282—in the Red Sea, 818—reef-building corals, XVII. 96—in the Australasian Sea, IV. 269; XV. 143—coral animals, XVII. 588; XXI. 1003.
 — rag, or coralline oolite, XV. 208.
 — Sea, XVII. 576.
 Corallaria, polypes, XXI. 1004.
 Corallineæ, lithophytes, XXI. 1009.
 Corallineæ, polypes, XXI. 1004.
 Coralline Crag, XV. 214, 215—of Suffolk, bryozoa contained in, XVII. 98.
 CORAM (Captain Thomas), VII. 363—Foundling Hospital founded by, XIII. 673.
 CORAN (AL), VII. 363. See Alcoran.
 Corax, genus of fossil fishes, XII. 341; XVII. 118.
 Coray (Diamant), XIII. 150.
 CORBAN, VII. 363.
 CORBEIL, town of France, VII. 363.
 CORBEILS, in fortification, VII. 363.
 CORBEL, in architecture, VII. 363; III. 508.
 — SOUS, VII. 363.
 CORBET (Richard), VII. 363.
 Corbett's mode of heating hot-houses, XI. 724.
 Corbicula, fossil mollusks, XVII. 107.
 Corbis, genus of mollusks, XV. 350—fossil, XVII. 107.
 Corbula, genus of mollusks, XV. 350—fossil, XVII. 108.
 CORCULUM of seeds, VII. 363.
 CORCYRA, now Corfu, VII. 363—sedition of, IV. 204—coins of, XVI. 370.
 Corcyrean war, IV. 202; XII. 454.
 CORD, VII. 364. See Chord.
 — wood, VII. 364.
 CORDAGE, VII. 364. See Rope-making.
 CORDATE, or heart-shaped, VII. 364; V. 90.
 CORDAY D'ARMANS (Marie-Anne-Charlotte), VII. 364; X. 79; XIV. 295.
 CORDELIER, VII. 365; VI. 226—Alcoran of, II. 456.
 — a political club, VII. 365, 649; X. 85.
 CORDEMOI (Gerald de), VII. 365.
 Cordiaceæ, nat. order of plants, V. 201.
 Cordierite, mineral, XV. 88.
 CORDILLERAS, VII. 365; III. 128; II. 669; XVII. 592—in Bolivia, IV. 822; in Colombia, VII. 133—in Chile, VI. 542—their geology, *ib.*—mines, XV. 235—snow-line on, XIV. 660; XVII. 602—in Mexico, XIV. 714—in Venezuela, XXI. 535. See Andes.
 Cordiner (Mr.), his description of the obelisk at Forres, IX. 787.
 Cordiners, VII. 366.
 CORDON, in fortification, VII. 365; IX. 819.
 CORDOVA, or Cordoba, in Spain, VII. 365; III. 124—Moorish rulers of, XX. 461.
 — in La Plata, XVII. 778.
 — (General), XX. 479.
 Cords, XIV. 397—friction of, 407.
 Corduan (Tour de) lighthouse, XIII. 464, 468; I. 907.
 CORDUS (Valerius), VII. 366.
 CORDWAINERS, VII. 366—origin of the name, III. 324.
 Cordyla, genus of insects, IX. 229.
 Cordylura, genus of insects, IX. 251.
 Cordylus, genus of reptiles, XIX. 31.
 Core, disease in domestic animals, XXI. 562.
 COREA, peninsula of Asia, VII. 366—language of, XIII. 217.
 Coregonus, genus of fishes, XII. 245, 243.

COR—COR

CORELLI (Arcangelo), VII. 366.
 CORENZIO (Belisario), VII. 366.
 Corethra, genus of insects, IX. 225.
 Coreus, genus of insects, IX. 162.
 Corfe castle, VIII. 112.
 CORFINIUM, VII. 366.
 CORFU, VII. 367; XII. 450, 456—climate of, 444—expenditure of Great Britain upon, 458.
 Coriacea, family of insects, IX. 258.
 CORIANDER, genus of plants, VII. 367; V. 195; XI. 745—seed, II. 337—cultivated in Essex, IX. 337.
 Coriscus, genus of fishes, XII. 267.
 CORIGLIANO, town of Naples, VII. 367.
 CORINGA, in Hindustan, VII. 367.
 CORINNA, Greek poetess, VII. 367.
 CORINTH, VII. 367—ruins of a temple at, III. 440—war with the Carthaginians in Sicily, VI. 283—war with the Corecyreans, IV. 202—monarchy of, XV. 413—coinage of, XVI. 357—sack of, by the Romans, XIX. 314—Theban forces repulsed in an attack upon, XXI. 178—grapes or currants of, XI. 16.
 —ISTHMUS of, VII. 369; XI. 12.
 CORINTHIAN, VII. 369—brass, V. 278; VII. 368.
 —order of architecture, VII. 369—its origin, III. 442—Roman, 444, 469, 473—Romans fond of, 444—modern Italian, 451, 477—Greek, 461, 466—remarks on, 486.
 CORINTHIANS, Epistles to the, VII. 369.
 CORIO (Bernardino), historian, VII. 369.
 CORIOLANO, three engravers on wood, VII. 369.
 CORIOLANUS (Caius Marcius), VII. 369; XIX. 299.
 CORIOLI, ancient Latin city, VII. 369.
 Coriolis on the relation between the pressure and temperature of steam, XX. 565.
 Corion of the skin, II. 834—of the mucous membrane, 836.
 Corixa, genus of insects, IX. 166.
 CORK, VII. 369—specific gravity of, XII. 89.
 —oak, V. 82—bark used in tanning, XIII. 306—value of imports of, VIII. 734.
 —in Ireland, VII. 369—harbour, XII. 505—taken by William the Third, 490—savings-bank, XIX. 669.
 —Cove of, VIII. 468. See Queen's town.
 —(Earls of). See Boyle.
 CORK-JACKET, VII. 369; XIII. 440—cork-belt, ib.
 Corked wines, XXI. 889.
 Corking, in carpentry, V. 746.
 CORLEONE, town in Sicily, VII. 373.
 Corliss Steam-engine Company, XX. 606.
 Cormac, Irish king, XII. 464.
 Cormogens, plants, V. 142.
 CORMONTAIGNE, French engineer, VII. 373—on fortification, IX. 815—his system, 820.
 Cormorants, XVI. 813—fishing with, in China, VI. 589.
 Corns, a kind of tuber in plants, V. 79.
 CORN, VII. 373—not eaten by ants, III. 263—estimate of the consumption of the various kinds of, in the United Kingdom, in 1852–53, VII. 396. See Corn-laws, Corn-trade, Agriculture, Barley, Wheat, &c.
 Corn-crake, bird, XVI. 807—shooting of, XX. 216.
 CORN-LAWS, VII. 374; II. 254, 258—principles of, VII. 385—their effects on agriculture, VIII. 723—effect of their repeal on the cotton-trade, XIV. 254—Act of Parliament in 1814, V. 618—Lord Londonderry's act in 1823, 636—modifying acts in 1826, 645—Mr Canning's bill in 1827, 650—act of 1828, 651—Mr C. Grant's bill, ib.—Sir Robert Peel's modification of the sliding-scale, 669—repeal of the, 670; II. 264; XVII. 365—Anti-Corn-law League, XIV. 256—James Wilson on, XXI. 875.
 CORN-TRADE, VII. 374—British, 395—fo-

COR—COR

reign, 402—Polish, ib.; XVIII. 158—of the Elbe, VII. 403—French, ib.—Spanish, ib.—of Odessa, ib.—American, 404—of Liverpool, XIII. 518—value of exports and imports of, VIII. 734, 736.
 Cornabii, Caledonian tribe, VI. 74.
 Cornacea, nat. order of plants, V. 195.
 CORNAGE, VII. 405.
 CORNARISTS, VII. 405.
 CORNARIUS (Joannes), VII. 405.
 CORNARO (Luigi), VII. 405.
 CORNBRASH, portion of the oolitic formation, VII. 405; XV. 207.
 Corncockle Muir, reptilian footmarks found at, XVII. 153.
 CORNEA of the eye, VII. 405; III. 43; XIII. 461; XVII. 678—in brutes, III. 96.
 CORNEILLE (Pierre), VII. 405—Boileau's kindness to, IV. 814—his dramas, VIII. 149, 155—Helvetius and Suard on his character and writings, I. 135 and n. 3—contrasted with Shakspeare, VIII. 158—his intercourse with Racine, XVIII. 744.
 —(THOMAS) VII. 405.
 —(MICHAEL), painter, VII. 405.
 Cornel order of plants, V. 195.
 CORNELIA, VII. 406; XIX. 318.
 Cornelian, VI. 67. See Carnelian.
 CORNET, VII. 406.
 —cavalry officer, VII. 406—commission, pay, and half-pay of, 202, 203.
 Cornice, III. 487, 508; V. 739—advantages of cornices to brick-walls, 736—remarks on, 743—plaster cornices in rooms, ib.—Doric, III. 464, 476—Ionic, 465, 475—Corinthian, 467, 474—Caryatic, 467.
 CORNICULARIUS, VII. 406.
 Cornolli (Ant.), his work on insects, IX. 21.
 Corns, in horses' feet, XXI. 560.
 Cornstone, XV. 200.
 CORNU, VII. 406—ammonis, ib. See Ammonites.
 CORNUCOPIA, VII. 406.
 Cornufelle (Lago di), XVIII. 831.
 Cornularina, polypes, XXI. 1004.
 Cornulite, fossil, XVII. 101.
 CORNUS, genus of plants, VII. 406; V. 195.
 CORNWALL, VII. 406—Dr Borlase's works on, V. 45—tin trade with the Phœnicians, 376—Carew's survey of, VI. 236—pilchard fisheries of, IX. 643—Cornish engines, I. 869; boilers, XX. 602—porcelain clay of, V. 343—population and value of property, VIII. 754—copper ores, VII. 352, 350; XVII. 621—Devonian rocks of, XV. 199; carboniferous, 201, 204—lodes in, 219, 220—depth of mines, 223—system of mining labour, 229—silver mines in, 234—tin mines of, 240, 241; VIII. 726; XVII. 621—arsenic from, XV. 246—rocking-stones in, VIII. 187.
 CORNWALLIS (Charles, Lord), VII. 408—his surrender to the Americans, V. 496, 499; XXI. 753—his war against Tippoo Sahib, V. 541; XI. 497—his permanent zemindary settlement in Bengal, IV. 650; XI. 517—his government in India, 497, 506, 520, 521—his government in Ireland, XII. 499—his Indian land-tax, XXI. 44.
 Cornwallite, mineral, XV. 103.
 CORO, in Venezuela, VII. 410; XXI. 537.
 COROLLA of plants, VII. 410; V. 117, 123.
 COROLLARY, VII. 410; X. 508—as to common terms, XIII. 570.
 COROLLET, or Corollule, VII. 410.
 Corollifloræ, sub-class of plants, V. 179, 198.
 COROMANDEL, VII. 410; IV. 652.
 CORON, or Koron, seaport of Messenia, VII. 410.
 CORONA, in optics, VII. 410; VI. 645, 651; XIV. 681. See Halo.
 —in architecture, III. 508.
 —in botany, VII. 412.
 —australis and borealis, two constellations, VII. 412.
 —in Roman antiquity, VII. 412, 523; VI. 737.
 CORONACH, VII. 412.
 CORONATION, VII. 412—oath, ib.—stone of Scotland, XIX. 750.
 Coronea, battle of, XXI. 177.
 Coronella, genus of serpents, XIX. 55.
 CORONELLI (Vincenzo), geographer, VII. 412.
 CORONER, VII. 412.
 CORONET, VII. 413; XI. 335.
 Coronis, genus of insects, IX. 209.
 Coronula, fossil barnacles, XVII. 101.
 CORPORAL, VII. 413—lance-corporal, ib.—of a ship of war, VII. 413.
 CORPORALE, VII. 413.
 CORPORATION, VII. 413—civic, VI. 736.
 —Act, attempts in 1787 and 1790 to get it repealed, V. 522, 536—repeal of, 652.
 —charitable, in the reign of George II., V. 457.
 —medical corporations, XIV. 465.
 —municipal, XV. 680—of London, XIII. 677.
 CORPOREITY, VII. 414.
 CORPULENCE, VII. 414.
 CORPUS CHRISTI, festival in the Romish Church, VII. 415.
 —Colleges—at Oxford, XXI. 459; Cambridge, 465.
 Corpus callosum, XVII. 538.
 CORPUSCLE, in physics, VII. 415.
 CORPUSCULAR PHILOSOPHY, VII. 415; IX. 272.
 —mechanism, XX. 750—laws of corpuscular action, 763.
 Corra Linn, XIII. 174; XIX. 791.
 CORRADI (Domenico), VII. 415; XVII. 62.
 CORRADINI DI SEZZA (P. Marcellino), VII. 415.
 Corradino, sculptor, XIX. 864.
 CORRADO (Sebastian), VII. 415.
 CORRECTION, in printing, VII. 415; XVIII. 542.
 —(HOUSE OF), VII. 416.
 CORREGIDOR, VII. 416.
 CORREGIO, town of Italy, VII. 416.
 —VII. 416. See Allegri.
 CORRELATIVE, VII. 416.
 CORRÈZE, in France, VII. 416; X. 277.
 CORRIB (Lough), VII. 416; X. 389; XII. 505.
 CORRIDOR, VII. 416.
 Corrientes, town and province of La Plata, XVII. 779.
 —Cape, XVII. 777.
 Corrija, bird, XVI. 800.
 CORROSION, VII. 416.
 Corrosive sublimate, VI. 498—as a preventive of dry rot, VIII. 212—poisoning with, XIV. 433—as a preservative of timber, XX. 167.
 CORRUIK, or Corriskin, lake in Skye, VII. 416; XX. 317.
 CORRUPTICOLÆ, sect, VII. 416.
 CORRUPTION of blood, in law, VII. 416; IV. 186.
 Corruptions of Christianity, I. 505.
 CORSAIR, pirate, VII. 416; IV. 431; V. 709—Algerine, II. 570 *et seq.*
 CORSELET, or Corslet, VII. 417.
 CORSEUL, town of France, VII. 417.
 Corsellis (Frederic), early printer, XVIII. 534, 535.
 CORSHAM, town in Wilts, VII. 417.
 CORSICA, VII. 417—Boswell's visit to, V. 63—reduced by the Romans, VI. 288; and by the French, X. 37—height of mountains in, XVII. 642—population of, X. 277—language, XIII. 213—Seneca's banishment to, XX. 46—Neuhoff, Baron von, his proceedings in, XVI. 154—weights and measures of, XXI. 810—map of, X. Plate. See Paoli.
 Corsini library, at Rome, XIII. 412.
 CORSNED, or Morsel of Execration, VII. 418; XVI. 702.
 CORSTORPHINE, near Edinburgh, VII. 418.
 CORT (Cornelius), VII. 418.
 —(Mr), his inventions in iron manufacture, XII. 539, 574.
 Cortailled, wines of, XXI. 886.

COR—COR

CORTE, in Corsica, VII. 418, 417.
 Cortereal (Gaspar), voyages of, VI. 158; X. 471. See Cortoreale.
 CORTES OF SPAIN, VII. 418; XX. 467, 492—new constitution of the, 473, 475, 480—of Portugal, XVIII. 395.
 —(HERNAN), conqueror of Mexico, VII. 418; II. 639—his proceedings in Mexico, XIV. 703, 704, 705—city of Mexico taken by, 706.
 —(Martin), his treatise on navigation, XVI. 3.
 CORTESE (Jacopo), VII. 420; V. 39.
 Corticus, genus of insects, IX. 130.
 CORTLAND, in New York, VII. 420.
 CORTOMARCK, in Belgium, VII. 420.
 CORTONA, VII. 420.
 —painter, XVII. 69.
 Cortoreale (Gasparo), navigator, XVIII. 164; VI. 158. See Cortereal.
 CORUNCANIUS (Tiberius), VII. 420.
 CORUNDUM, mineral, VII. 420; XV. 87; XVII. 623.
 CORUNNA, VII. 421—Sir John Moore's retreat to, V. 604; XV. 529; XXI. 706—battle of, V. 604; XV. 529—tower of, XIII. 464; X. 372.
 CORUS, Omer, or Homer, Jewish measure, VII. 421.
 CORUSCATION, VII. 421.
 Corvée system, in France, X. 46, 245, 273; XXI. 43—its abolition, 366.
 CORVETTE, sloop of war, VII. 421.
 Corvina, genus of fishes, XII. 284, 285.
 CORVO, island, VII. 421; IV. 336.
 CORVORANT, VII. 421. See Cormorant.
 CORVUS, a constellation, VII. 421.
 —ancient military engines, VII. 421.
 —genus of birds, VII. 421; XVI. 763. See Crow.
 —(M. VALERIUS), VII. 421.
 CORWEN, town in Wales, VII. 422.
 Coryat on the introduction of table-forks, IX. 785.
 CORYBANTES, VII. 422, 591.
 CORYBANTICA, ancient festival, VII. 422.
 CORYCOMACHIA, VII. 422.
 Corydalis, genus of insects, IX. 179.
 CORYGAUM, in Hindustan, VII. 422.
 Corylaceæ, nat. order of plants, V. 208.
 Corymb, in botany, V. 114.
 Corymbifera, sub-order of plants, V. 197.
 CORYMBIUM, VII. 422.
 Corynidae, polypes, XXI. 1006.
 Coryphæna, genus of fishes, XII. 295, 298.
 CORYPHEUS, VII. 422; VIII. 134*.
 Coryphodon, genus of fossil mammals, XVII. 162.
 Corystes, genus of crustacea, VII. 541.
 Corythaix, genus of birds, XVI. 783.
 Corythoichthys, genus of fishes, XII. 315.
 Corythus, genus of birds, XVI. 762.
 CORYVRECKAN, whirlpool of, VII. 422.
 CORYZA, VII. 422; VI. 332.
 Cos, island, VII. 422—coins of, XVI. 377—silkworm of, XX. 286.
 COSCINOMANCY, VII. 422.
 COSECANT, in geometry, VII. 422; XXI. 338.
 COSENZA, a city of Naples, VII. 422.
 CÜSFELD, VII. 423. See Kösfeld.
 COSHERING, VII. 423.
 COSINE, VII. 423; XXI. 338—law of cosines, I. 902.
 COSLIN, town in Prussia, VII. 423; XIII. 132.
 Cosmacanthus, genus of fossil fishes, XVII. 117.
 COSMAS, bishop, VII. 423.
 —navigator, VII. 423.
 —saint and martyr, VII. 423.
 Cosme (Frère Jean de St), XX. 819 and n. 1.
 COSMETIC, VII. 423.
 COSMICAL, VII. 423—notions of the Buddhists, X. 724.
 COSMOGONT, VII. 423—fabulous, XV. 760.
 Cosmographical Academies, II. 62.
 COSMOGRAPHY, VII. 423.
 COSMOLABE, mathematical instrument, VII. 423.
 Cosmological argument for the existence of God, XXI. 186.

COR—COS

I

COS—COT

COSMOLOGY, VII. 423; XIV. 605—of the ancients, IV. 448; II. 167—the real in, XIV. 615.
 COSMOPOLITE, VII. 423.
 COSNE, French town, VII. 423.
 COSHOES. See CHOSROES.
 COSSACKS, VII. 423; VIII. 100; XIX. 474 *et seq.*, 549—Cossack horses, XI. 635—country of, XIX. 521—Zaporagain Cossacks, XXI. 370—Ural, 495—their value as light troops, 709.
 COSSE DE GENISTE, order of knighthood, VII. 424.
 COSSEIR, trade of, XVIII. 819.
 COSSIM (Meer), XI. 486, 487.
 COSSIMBAZAR, in Hindustan, VII. 424; X. 400.
 COSSIPORE, in Hindustan, VII. 424.
 COSSONUS, genus of insects, IX. 141.
 COSSUS, genus of insects, IX. 211.
 COSSYAH HILLS, in Hindustan, VII. 424; IV. 651; X. 407.
 COSSYPHENES, tribe of insects, IX. 131.
 COSSYPHUS, genus of insects, IX. 131.
 COSTA (Achille), his works on insects, IX. 23.
 — (O. G.), his entomological works, IX. 16.
 — RICA, republic of, VII. 424; XI. 77.
 COSTAL, VII. 425.
 COSTAMBONE, in Anatolia, XIII. 54.
 COSTANZO (Angelo di), VII. 425.
 COSTARD (George), VII. 425.
 COSTE (Mons.), on the nests of the stickle-back, XII. 281.
 COSTER (Lawrence), his claim to the invention of printing, IV. 706, 707. See KOSTER.
 COSTIVENESS in cattle, XXI. 565.
 COSWAY (Richard), VII. 425.
 COTA (Rodriguez), Spanish poet, VII. 425.
 COTANGENT, VII. 425; XXI. 338.
 COTE D'OR, in France, VII. 425—wines of the adjoining districts, XXI. 954.
 COTE-ST-ANDRE (La), town of France, VII. 426.
 COTELERIUS (John Baptist), VII. 426.
 COTERELLUS, VII. 426.
 COTERIE, VII. 426.
 COTES (Roger), VII. 426; IX. 675; XVI. 6—his *Harmonia Mensurarum*, I. 647—Newton's remark at his death, 903—his mathematical discoveries, 692, 714—his life and character, 714, n. 2—his discovery of a certain property of a circle, called the Cotesian theorem, II. 561—his correspondence with Newton regarding a new edition of the *Principia*, XVI. 208.
 COTES-DU-NORD, in France, VII. 426.
 COTESWOLD, VII. 426.
 — hills, X. 679—sheep, *ib.*; II. 346—soil of, XV. 217.
 COTHEN, German town, VII. 426; XIII. 133.
 Cothi, river, VI. 52.
 Cotho, taken by the Romans, VI. 302.
 Cothual (Yusuf), II. 605.
 COTHURNUS, VII. 426; VI. 24; VIII. 135.
 COTIGNAC, town of France, VII. 426.
 COTILLON, VII. 426.
 Cotingas, birds, XVI. 750.
 COTIOTE, in Hindustan, VII. 427.
 Cotoneaster, genus of trees, XVII. 763.
 COTOPAXI, volcanic mountain, VII. 427—cone of, XXI. 604—height of, VIII. 386; II. 669; XVII. 645—fishes ejected by, XII. 260.
 COTRONE, city of Italy, VII. 427. See CROTONA.
 Cotswood, II. 346. See COTESWOLD.
 COTE, or Cot, VII. 427.
 COTTA (C. Aurelius), Roman general, VII. 427—defeated by Mithridates, XV. 284.— (Bernhard), on rocks, XV. 129, 133.— German journalist, XVI. 200.
 COTTABUS, a game, VII. 427; IX. 495.
 COTTAGE SYSTEM, VII. 427.
 Cottages for farm labourers, II. 268.
 COTTAPATAM, town in Hindustan, VII. 435.
 Cottar system, in Inverness-shire, XII. 439.

COT—COT

COTTBUS, Prussian town, VII. 435. See KOTTBUS.
 Cotterel's blast-furnace, XVIII. 80, 81.
 Cotterill's lock, XIII. 535.
 Cottian Alps, II. 623; XVII. 596—the home of the Valdenses, XXI. 505.
 Cottin (Madame), character of her novels, XIX. 289.
 COTTIWAR, town in India, VII. 435. See KATTYWAR.
 Cottoidei, family of fossil fishes, XII. 344.
 COTTON (Charles), VII. 460—on angling, III. 149, n. 163; XXI. 696.
 — (General), V. 784.
 — (Sir ROBERT BRUCE), VII. 460; XIII. 389.
 — VII. 435—bleaching of, IV. 762—loss of weight by bleaching, 767—dyes worse than silk and wool, VIII. 274, 278—structure of, 277—dyeing of, *ib.*—method of dyeing it red, 292; yellow, 299; blue, 303; black, 306; green, 310; violet, 312; orange, 313; mixtures of black, &c., 314—imports of, into the United Kingdom, XIV. 255, 287; and consumption of, *ib.*—exports, 287—dependence of Britain on the United States for supplies of, 291—its culture in New South Wales, IV. 280—Asia, III. 738—Bengal, IV. 649—Brazil, V. 294—Ceylon, VI. 399—Egypt, VIII. 428, 431, 516—Greece, XI. 16—Guiana, 82—Georgia, X. 566—India, XI. 453—Louisiana, XIII. 700—Mexico, XIV. 717—Mississippi state, XV. 278—Asiatic Russia, XIX. 551—the Two Sicilies, XX. 249—United States, XXI. 425—silk-cotton tree, V. 184—silk-cotton order of plants, 184—paper made from, XVII. 249.
 — factories. See Factory.
 — goods, value of, exported annually, VII. 456; VIII. 736—quantity imported into Canada, VI. 151—cause of fall in price of, XVIII. 241—increased demand for, with the fall of price, XXI. 69.
 — MANUFACTURE, VII. 437; XIV. 285—its establishment and progress in Scotland, X. 650—Hargreave's and Arkwright's improvements in, III. 609; V. 508—of Antrim, III. 286—of Bengal, IV. 649—Dacca, VII. 614—Derbyshire, 755—Belgium, IV. 625—Holland, XI. 583—Paisley, XVII. 89—Preston, XVIII. 510—England, VIII. 729—France, X. 252—Germany, 590—Glasgow, 650—Georgia, 565—Ghent, 601—Lancashire, XIII. 178—Japan, XII. 693—Java, 706—Ireland, 520—Lombardy, XIII. 657—Mexico, XIV. 717—imports into Liverpool, XIII. 518—progressive inventions of machinery for, XIV. 251—impulse given to, by the repeal of the corn-laws, 255—Manchester, 252 *et seq.*—effect of, on the health of operatives, 253, n.—in Pennsylvania, XVII. 396—Philadelphia, 510—printing of cotton, XVIII. 520—in Prussia, 668—Rhode Island, XIX. 146—Russia, 542—Scotland, 805—Switzerland, XX. 890—United States, XXI. 426, 427. See Calender, Spinning, Weaving.
 — plants, VII. 435; V. 184.
 Cotton-seed cake, as manure, II. 405—analysis of, *ib.*
 Cotton-spinners, diseases of, XIV. 443.
 Cotton-velvet, X. 252.
 Cotton-yarn, comparative cost of English and Indian, VII. 439—prices of, from 1786 to 1807, 446—quantity spun, exported, and worked up at home from 1818 to 1853, 453—markets to which exported, *ib.*—quantity spun in this country in 1832, 454—value of exports of, 736—in 1835, XIV. 253.
 Cottonian MSS., XIII. 391.
 Cottus, genus of fishes, XII. 280, 282—fossil, 344.
 Cotugno on the ear, III. 47.
 COTULA, or Cotyla, VII. 460.
 Cotunnite, or Cotunnia, XV. 105.
 Coturnix, genus of birds, XVI. 791.
 COTYLEDON, VII. 460; V. 76, 141.

COT—COU

Cotyledoneæ, order of plants, V. 180.
 Cotylis, genus of fishes, XII. 307.
 Cotyloid cavity, III. 12.
 COTYS, VII. 460.
 COTYTO, VII. 460.
 COUCH, in painting, VII. 460—in surgery, *ib.*; VI. 332.
 — (Richard Q.), on the metamorphosis of crustacea, VII. 544.
 COUCHANT, in heraldry, VII. 460; XI. 332.
 COUCHE, VII. 460.
 Coucy (Enguerand de), XX. 884.
 Couerbe on the fatty principles of the brain, II. 819.
 Cough, chronic, in the domestic animals, XXI. 573.
 COULAN, VII. 460. See Quilon.
 COULOMB (Charles Augustin), VII. 460; I. 742, n. 2, 873—discovered the true law of magnetic attraction and repulsion, 742, 989—further discoveries in magnetism, 743; XIV. 6, 23, 28, 37, 43 *et seq.*—on electricity, VIII. 531; I. 988—on the distribution of electricity, 551—53; I. 989; dissipation of, VIII. 550—his "proof plane," I. 988—on hydrodynamics, 726; XII. 73, 159—his balance of torsion, I. 726, 873, 988; IV. 386; VIII. 549—on friction and passive strength, I. 873—on the friction of fluids, 887—his artificial magnets, XIV. 70—experiments on the modes of making artificial magnets, 77—compared with Robison, I. 873, 874—on compass-needles, XIV. 78.
 COULOMMIERS, town of France, VII. 465.
 COUNCIL, VII. 465—of war, *ib.*—in Church history, *ib.*; I. 526; XIX. 750—of boroughs, VIII. 721.
 — cabinet, VI. 46.
 COUNSEL, VII. 465. See Advocate.
 COUNSELLOR, VII. 465—Privy, *ib.*; XVIII. 587.
 COUNT, VII. 465.
 COUNTER, VII. 466—of a horse—in heraldry—Counter-changed—Flory—Ermine—Paled—Passant—Pointed—Quartered—Salient—Guard—March—Mine—Proof—Sign—*ib.*, 467.
 Counter-company, in heraldry, XI. 326.
 COUNTERSCARP, VII. 467; IX. 818.
 COUNTERPOINT, in music, VII. 466—double, XV. 734.
 Counters, reckoning by, III. 582.
 Counting-machines, XIV. 414.
 COUNTORS, VII. 467.
 Country, statistical account of a, what it should include, XX. 550.
 COUNTY, VII. 467—representation of, *ib.*—divisions of, VIII. 719—cities which are counties of themselves, 721—police of English counties, XVIII. 198, 201; of Scotch counties, 203, 204.
 — court, VIII. 786.
 — rate, VII. 467.
 Coup de soleil, XIV. 431.
 Couple, in mechanics, XIV. 405—coupling of parallel axes, 397, 399—double, Hooke's coupling, 400.
 Couplet (Mons.), on centres, VI. 374—his hydraulic experiments, XII. 133; XIX. 186, 198, 199.
 Courage not identical with prudence, I. 395—observations on, 396.
 COURANT, VII. 467. See Current.
 — piece of music, VII. 467.
 COURAYER (Pierre François) VII. 467.
 COURIER, VII. 467—ancient, *ib.*; III. 140.
 COURLAND, VII. 467. See Kourland.
 — Duchess of, empress of Russia, XIX. 481.
 COURT, VII. 467—of Arches, 468—Baron, *ib.*; VIII. 786—plaster, VII. 468—hundred court, VIII. 786—county court, 786—of equity, IX. 317—of justice in England, VIII. 785—Court of the Household, XI. 774; of Marshalsea, or Green Cloth, *ib.* See France, Scotland, Ireland, &c.
 COURT-MARTIAL, VII. 468; XV. 5; XVI. 107.
 Courtezans, the London theatres infested by, VIII. 169.

COU—COW

COURTHEZON, town of France, VII. 468.
 COURTRAI, in Belgium, VII. 468.
 COUSIN, VII. 468—cousins-german, X. 570.— (David), his abattoir in Edinburgh, II. 11.
 — (M. V.), his edition of Abelard's works, II. 27.
 — (M.), on the moral sense, XIV. 581—on the knowledge of being, 611—on the scepticism of Pascal, XVII. 329, 330.
 COUTANCES, town of France, VII. 468.
 COUTH-UTLAUGH, VII. 468.
 Coutinho (Vasco Fernandes), V. 280.
 COUVIN, town of Belgium, VII. 468.
 Couzeranite, mineral, XV. 71.
 Covadonga, IV. 156.
 COVE, in Ireland, VII. 468. See Queens-town.
 — or Coving, in architecture, III. 508.
 Covelline, mineral, XV. 118.
 COVELONG, in Hindustan, VII. 468.
 COVENANT, in theology, VII. 469; I. 480 and n. 2.
 — in ecclesiastical history, VII. 469; V. 395.
 — (Solemn League and), VII. 469; V. 404.
 COVENANTERS, VII. 469; V. 395, 428 *et seq.*—persecution of, at Glasgow, X. 647.
 Covent Garden market, XIII. 664—theatre, 676; XXI. 173, 176.
 COVENTRY, VII. 469—canal, XXI. 17—ribbon factories at, 738.
 — (Sir John), VI. 626.
 — (Mr.), his stage micrometer, XIV. 760.
 COVERDALE (Miles), VII. 469—his Bible, IV. 702.
 Covered-way, in fortification, IX. 819.
 COVERIPAUK, in India, VII. 470.
 COVERT, in law, VII. 470—way, in fortification, *ib.*; IX. 819.
 COVERTURE, in law, VII. 470.
 Covey of partridges, XX. 221.
 Covilham (Pedro da), X. 393.
 COVIN, VII. 470.
 COVING, in building, VII. 470.
 Covington, in Kentucky, XIII. 70.
 COVINUS, VII. 470.
 Cow, VII. 470; II. 342; XIV. 214—yield of milk by, VII. 622—its milk, XV. 11—food of, as affecting the milk, VII. 621—dairy breeds of, *ib.*—Alderney, XII. 730—Devonshire, VII. 764—Derbyshire, 755. See Dairy.
 Cow-parsnip, forage plant, II. 329.
 Cow-pen bird, XVI. 762.
 Cow-POX, VII. 470; XII. 720 *et seq.*; XXI. 500, 501.
 COW-TREE of South America, VII. 470; V. 206.
 Cow-wheat, V. 202.
 — of Demerara, V. 199.
 Cowan's Hospital, Stirling, XX. 702.
 COWARD, in heraldry, VII. 470.
 COWBRIDGE, town in Wales, VII. 470.
 — (Mr.), his report on the poor-laws, XVIII. 307, n. 2, 308, n. 2.
 Cowburn's cellular steam-boiler, XX. 616.
 Cowdee. See Kawri pine.
 COWELL (Dr John), VII. 470.
 Cowen (Messrs), their gas-retorts, X. 413.
 COWES (West), in Isle of Wight, VII. 470; XXI. 862.
 COWHAGE, or Cowitch, VII. 470; V. 190.
 Cowie (James), on farm-buildings, II. 371.
 COWL or Coul, VII. 470.
 COWLEY (Abraham), VII. 470—remarks on his ode entitled *Destiny*, I. 270—poetry of, XVIII. 122.
 — (Walter and Richard), XXI. 815.
 Cowper (B. Harris), his translation of documents regarding the Council of Nice, XVI. 248, n.
 — (WILLIAM), VII. 471—his opinion of Barclay's Argenis, IV. 441—his hymns, XII. 189—Hayley's Life of, XI. 253—Pitt's neglect of, XVII. 735—poetry of, XVIII. 125.
 — (William), anatomist, II. 764—on the erectile tissue, 799.

COW—CRA

- Cowper's glands, III. 70.
 — printing-machine, XVIII. 559.
 COWRIES, VII. 473; XV. 384—tiger and money cowry, *ib.*—used as money, XIII. 142; XV. 417—fossil, XVII. 110. See *Cypræa*.
 Cowry, bird, XVI. 748.
 Cowslip, V. 203.
 Cox (Richard), VII. 473.
 — on brehon law, XIX. 750.
 Coxal bones, III. 12.
 COXE (William), VII. 473—on *Isola Bella*, V. 55—his notice of a remarkable bridge in Switzerland, VI. 384.
 COYPEL (Noel), painter, VII. 473.
 Coypou, rodent quadruped, XIV. 180—its fur, X. 348.
 COZENING, VII. 473.
 Cozens, painter, XXI. 386, 387.
 CRAB, VII. 473, 541—as food, IX. 765.
 — Island, IV. 660.
 — soldier, VII. 542.
 Crab's eyes, VII. 539.
 CRABBE (George), VII. 473—his definition of genius, X. 450—his poetry, XVIII. 126.
 Crabro, genus of insects, IX. 196.
 Crabronites, tribe of insects, IX. 196.
 Crabtree's combing machine, XXI. 925.
 CRACOW, VII. 474; X. 212—library of, XIII. 425—foundation of, XVIII. 137—republic of, 157—incorporated with the empire of Austria, X. 222, 225; IV. 306; XIX. 498—taken by Charles XII, XX. 853—university of, XXI. 492.
 Cradles, in mezzotinto engraving, XIV. 733, 734.
 — in Lapland, XIII. 240.
 CRADLING, in carpentry, VII. 475.
 Cradock (Mr), on the defects of fir timber, XXI. 275.
 CRAGG, a geological formation, VII. 475—red crag, XV. 214; coralline, *ib.*
 Craggie (Loch), trout of, III. 158.
 CRAGUS, mountain in Lycia, VII. 475.
 CRAIG (John), VII. 477.
 — (John), his system of savings-bank management, XIX. 669.
 — (Sir JAMES GIBSON, Bart.), VII. 476.
 — (Mr), architect of New Town of Edinburgh, VIII. 394.
 — (Sir THOMAS), VII. 477; V. 718—his illustrations of feudal law, IX. 524—*Tytler's* Memoir of, XXI. 414.
 Craig-Phadrick, vitrified fort of, IX. 791.
 Craigellachie bridge, XII. 582.
 Craigentiny meadows, irrigation of, II. 326; XII. 620.
 Craigie (David), his work on anatomy, III. 73.
 Craighleith quarry, VIII. 408; XX. 711—transverse strength of its stone, 717; its resistance to crushing, 718.
 Craik (Dr), physician to Washington, XXI. 762, 746.
 — (Dr G. L.), on Spenser's Fairy Queen, XX. 507.
 — (Mr), of Abigland, his agricultural improvements, XIII. 99.
 CRAIL, in Fifeshire, VII. 479.
 Crambus, genus of insects, IX. 218.
 Cramer (Dr), on the geometric proportions of bees' combs, IV. 578—on mortality at Geneva, XV. 622.
 — (J. B.), his opinion of Beethoven as a pianoforte player, IV. 590.
 — (Peter), his work on butterflies, IX. 6.
 — on Greek education, XV. 807.
 CRAMOND, village on the south side of the Firth of Forth, VII. 479; VIII. 408.
 Cramp of the stomach, in domestic animals, XXI. 565.
 CRAMPONEE, in heraldry, VII. 480.
 Crampton (J. James), articles of international copyright drawn up by, VII. 360.
 Cran, a measure, IX. 635, *n.* 1.
 CRANBERRY, VII. 480; V. 198—culture of, XI. 719—exported from Russia, XIX. 519.
 — order of plants, V. 198.

CRA—CRA

- CRANBORNE, town in Dorsetshire, VII. 480.
 CRANBROOK, in Kent, VII. 480; XIII. 66.
 Cranchia, genus of mollusks, XV. 400.
 CRANE, bird, VII. 480; XVI. 797.
 — a machine for raising great weights, VII. 480; XIV. 415.
 Crane's iron-works, XII. 544.
 Cranesbill order of plants, V. 187.
 CRANGANORE, in India, VII. 480.
 Crania, genus of mollusks, XV. 339—fossil, XVII. 105.
 Craniadae, family of mollusks, XV. 339.
 Cranium, general description of, III. 27, 28, 29. See *Skull*.
 CRANK, VII. 480; XIV. 398—Watt's application of, to the steam-engine, XX. 581—description of, and analysis of its action, 589, 590—combination of two at right angles, 591; analysis of their action, *ib.*—effect of the connecting-rod on the crank's action, *ib.*
 — in sea language, VII. 480.
 — for hard labour in prisons, XVIII. 573; XIII. 278.
 CRANMER (Thomas), archbishop of Canterbury, VII. 480; VIII. 700, 706, 710—his Bible, IV. 702—his degradation, VII. 700.
 CRANNY, in glass-making, VII. 485.
 CRANTARA, VII. 485.
 CRANTOR, Greek philosopher, VII. 485.
 Cranworth (Lord), on the evils of copyhold tenure, VII. 355, *n.*
 CRAON, town of France, VII. 485.
 CRAONNE, French town, VII. 485—battle of, *ib.*; X. 167.
 CRAPE, VII. 485—Norwich crape, XVI. 333.
 CRASHAW (Richard), VII. 485.
 CRASIS, VII. 485—in grammar, *ib.*
 Craspedosoma, genus of myriapods, XV. 748.
 Crassitella, genus of mollusks, XV. 350—fossil, XVII. 108.
 Crassulaceae, nat. order of plants, V. 194.
 CRASSUS (M. Licinius), the triumvir, VII. 485; XIX. 324—his expedition against the Parthians, XVII. 310, 435.
 — (L. LICINIUS), Roman orator, VII. 485.
 Cratægus, genus of trees, XVII. 763.
 CRATE, VII. 485.
 CRATER, VII. 485; XXI. 604—of *Ætna*, II. 190—of Tenger Mountain, in Java, XII. 702—elevation theory of craters, XV. 190—cone within, 191—craters of elevation, XVII. 590—encircling craters, XXI. 605.
 — constellation, VII. 485; IV. 80.
 Craterus, XIII. 773.
 CRATES, Greek philosopher, VII. 485; XXI. 970.
 Crati, river, XX. 238.
 CRATINUS, comic poet, VII. 486.
 CRATIPPUS, philosopher, VII. 486.
 Cratistis, geometer, X. 499.
 Cratylus, III. 538.
 Crau, alluvial plain in France, V. 241.
 Crauford (John), on the original population of the Indian Archipelago, III. 748—his account of Ava, IV. 321—his estimate of the population of Burmah, V. 780—his embassy to Cochinchina, VII. 50; to Siam, XX. 234.
 Cravant, centring for the bridge of, VI. 376.
 Craven, in Yorkshire, XXI. 956, 957, 958.
 Craw-fish, VII. 542.
 CRAWFORD (Adair), physician, VII. 486—on heat, XI. 273, 274; I. 761, 927; IV. 739.
 — (Dr Stewart), VII. 486.
 — (John), VII. 486.
 Crawford's Report on the Penitentiaries, United States, XVIII. 571, 572.
 Crawford of Drumsoy, his perversion of history exposed, XIII. 158.
 Crawhall's rope-machine, XIX. 412.
 Crawley (Sir Francis), XXI. 689.
 Crawley-springs, near Edinburgh, III. 337; VIII. 405.
 Crax, genus of birds, XVI. 785.
 Cray, river in Kent, XIII. 65.

CRA—CRE

- CRAYER (Caspar de), painter, VII. 486.
 Cray-fish, VII. 542; IX. 765.
 CRAYFORD, in Kent, VII. 487.
 CRAYON, VII. 487; XIII. 510.
 Creadon, genus of birds, XVI. 753.
 CREAM, VII. 487; VI. 523; XV. 10—clouted-cream, VII. 623. See *Dairy*.
 — of tartar, VII. 487; its use in dyeing, VIII. 278. See *Argol*.
 CREASOTE, VII. 487; XIX. 621—a preservative of meat, IX. 767—used for preserving timber, V. 173; XX. 167; XXI. 279.
 CREAT, VII. 487.
 CREATION, VII. 487—era of the, VI. 668; XI. 540—objections to the Mosaic account of, I. 455; principle on which they are to be answered, *ib.*—account of, probably committed to writing long before the time of Moses, 454—as described in Genesis, XXI. 195.
 CREBILLON (Prosper Jolyot de), VII. 487—Voltaire's quarrel with, XXI. 658.
 — (Claude), VII. 487—character of his novels, XIX. 288.
 CRECY, Crescy, or Cressy, town of France, VII. 487—battle of, VIII. 683; VI. 616; X. 17—archers at the battle of, III. 424.
 CREDENTIALS, VII. 487.
 CREDIBILITY, VII. 487—of the Scriptures, XIX. 832.
 CREDIT, VII. 487; XVIII. 235—bad effects of long credit, VII. 198—Holland a country of short credit, *ib.*—definition of, XV. 450.
 — Foncier, X. 263.
 — Mobilier, X. 289; X. 263.
 CREDITON, in Devonshire, VII. 490—serge woven at, 764.
 CREDITOR, VII. 490.
 Crednerite, mineral, XV. 111.
 CREDULITY, VII. 490.
 CREECH (Thomas), VII. 490.
 CREED, VII. 490; I. 502—Nicene, XI. 34; XVI. 248—the apostles, I. 491, 493; III. 305—Athenasian, IV. 158—creeds rejected by the Independents, XII. 370. See *Confession of Faith*.
 — (Thomas), printer, XVIII. 538.
 Creek, in geography, X. 483.
 — Falls, in New York, XVI. 214.
 Creeks, Indians, II. 680.
 Creep, in coal-workings, VII. 122.
 Creepers, birds, XVI. 768.
 CREETOWN, in Kirkcudbright, VII. 490.
 CREFELD, or Krefeld, in Prussia, VII. 490.
 Creighton (William), on the law of the relation between the pressure and temperature of steam, XX. 565.
 CRELLIUS (John), VII. 490.
 CREMA, town in Lombardy, VII. 490.
 Crematocheilus, genus of insects, IX. 127.
 CREMATION, VII. 491. See *Burning of the Dead*.
 CREMERA, river in Etruria, VII. 491.
 CREMNITZ, town of Hungary, VII. 491. See *Kremnitz*.
 Cremocarp, in botany, V. 137.
 CREMONA, in Lombardy, VII. 491—school of painting, XVII. 72, 73—*Virgil* studies there, XXI. 593—its violins, 592.
 CRENATE, VII. 491; V. 89.
 Crenatula, genus of mollusks, XV. 348.
 Crenella, genus of mollusks, XV. 348.
 CRENELLATED, VII. 491.
 CRENELLE, or imbattled, in heraldry, VII. 491.
 Crenidens, genus of fishes, XII. 287.
 Crenilabrus, genus of fishes, XII. 267.
 Crennels, VI. 327.
 CRENOPHYLAX, VII. 491.
 CREODIBA, VII. 491.
 CREOLE, VII. 491—of Bolivia, IV. 831—Cuba, VII. 568—Mexico, XIV. 718.
 CREON, VII. 491.
 Creozote. See *Creasote*.
 CREPANCE, VII. 491.
 CREPIDA, VII. 491.
 Crepidula, genus of mollusks, XV. 381.
 CREPUNDIA, VII. 492.
 Crepuscularia, family of insects, IX. 209.
 CREPUSCULUM, VII. 492.
 Cres, VII. 493.

CRE—CRI

- CRESCENT, VII. 492—in heraldry, *ib.*; XI. 326—three orders of knighthood, VII. 492.
 Crescentiaceae, nat. order of plants, V. 200.
 CRESCENTINO, town of Piedmont, VII. 492.
 CRESCIMBENI (Giovanni Mario de), VII. 492.
 CRESPI (Giuseppe Maria), VII. 492.
 Cress, V. 182—culture of, XI. 744.
 — Indian, V. 188; XI. 745.
 CRESSET, VII. 492.
 CRESSY, French town, VII. 492. See *Crecy*.
 CREST, in armoury, VII. 492.
 — in heraldry, VII. 492; XI. 337.
 CRETACEOUS, VII. 493.
 — period, in geology, XV. 209—rocks, origin of, XVII. 619—shells of, XV. 403—fishes, XVII. 640.
 Cretans, their war with the Egyptians, VIII. 459.
 CRETE, VII. 493—castes in, VI. 315—coins of, XVI. 372, 373—*Dactyli Idæi*, VII. 615—insurrection of 1823, XI. 27. See *Candia*.
 CRETINS, VII. 496—occasionally found in Britain, 687—cretinism dependent on climate, XIV. 443—where it prevails, 539—in the department of Gironne, X. 405—in the Basses Pyrenees, XVIII. 701.
 CREUSA, VII. 497.
 CREUSE, in France, VII. 497.
 Creutz (Count), Swedish poet, XIX. 698.
 Creutzer (Christian), his works on insects, IX. 8.
 CREUX, in sculpture, VII. 497.
 Creuzer, on ancient mysteries, XV. 754.
 Crevasses, in the ice of glaciers, X. 635.
 CREVIER (Jean Baptiste Louis), VII. 497.
 Crew of a ship of war, XVI. 105—health of, *ib.*
 CREWE, town of Cheshire, VII. 497.
 CREWKERNE, in Somerset, VII. 497.
 Crex, genus of birds, XVI. 807.
 Crib-biting, a disease of horses, XXI. 565.
 Cribispongia, fossil sponges, XVII. 93.
 Cricetus, genus of mammalia, XIV. 182.
 Crichton (George), VII. 499, *n.*
 — (JAMES), VII. 497—*Tytler's* Life of, XXI. 413.
 — Royal Institution for lunatics, VIII. 240.
 CRICKET, insect, VII. 501; IX. 157.
 — game of, VII. 501; XI. 170—laws of, VII. 501.
 CRICKHOWEL, in South Wales, VII. 503.
 CRICKLADE, in Wiltshire, VII. 503.
 Cricodus, genus of fossil fishes, XII. 337.
 CRICOID, VII. 503—cartilage, III. 50.
 CRIEFF, in Perthshire, VII. 503—mineral water of, XVII. 457.
 Crime, causes of, XIII. 275—natural obstacles to, 276—principle of proportioning penalties to, *ib.*—statistics of, 278; XX. 552—benefit of clergy, VI. 764—penal colonies, VII. 139—in Belgium, IV. 616—state of, in England and Wales, VIII. 750—France, X. 282—Glasgow, 654—Manchester, XIV. 253—Ireland, XII. 530—India, XI. 521—Lanarkshire, XIII. 176—London, 666—Spain, XX. 492—Suffolk, 791—New York, XVI. 221—Scotland, XIX. 803—register of crimes, XVIII. 208—in Sweden, 866. See *Criminal Law, Police, Prisons, Penitentiaries, &c.*
 CRIMEA, VII. 503—declared independent in 1789, VI. 336—ceded to Russia, *ib.*; XIX. 471—coasts of the, IV. 743—Crimean army stove, XIII. 172—landing of French and British troops in, XIX. 503; XXI. 375—military operations in 1854, 1855, XIX. 503; XXI. 375—evacuation of, XIX. 513—productions of, 520—effect of the war in, on the tea-duties, XXI. 90—wines of, 886—map of VII. Plate.
 CRIMES AND PUNISHMENTS, VII. 506—Beccaria on, IV. 556—conditions under which punishments must be employed, XIII. 276—primary and secondary qualities of punishments, 277. See *Crime*.

CRI—CRO

Criminal law of England, VIII. 784—attempts to improve the, by Sir James Mackintosh and others, V. 633, 638—acts passed in 1823, 638—Sir R. Peel's reformation of, XVII. 363.
Crimson, mode of dyeing wool, VIII. 290—cotton, 295.
Crimin Canal, III. 527; XVI. 55; XIX. 12, 807.
Crinoidea, fossil echinoderms, XVII. 98.
Crinoidea, XXI. 984, 994, 995.
Cricerides, tribe of insects, IX. 147.
Criceris, genus of insects, IX. 147.
Crippling, in carpentry, XX. 752, 759.
Crispe (Sir Nicholas), XXI. 689.
CRISPIN and CRISPANUS, VII. 506.
CRISSA, or Crisa, VII. 506; II. 728.
Cristiceps, genus of fishes, XII. 309.
Critchley's heat-regulator, XI. 723.
CRITHOMANCY, VII. 506.
CRITIAS, VII. 506; IV. 209; XX. 383.
CRITICISM, VII. 506; XVII. 526—Biblical, VII. 506—first taught by Socrates, XX. 402.
CRITO, Athenian philosopher, VII. 506—friendship between him and Socrates, XX. 372, 379, 393, 394.
CRITOLAUS, VII. 506.
Crius, genus of fishes, XII. 302.
CROATIA, VII. 506—wines of, XXI. 886.
Croatian language, IX. 392.
Croats, in Hungary, XII. 11.
Crocisa, genus of insects, IX. 200.
CROCKET, VII. 506; III. 508.
CROCODILE, VII. 506; XVII. 634; XIX. 22, 23—bones of, III. 86, 87—teeth of, XVI. 437; their chemical composition, 418—its power of resisting starvation, III. 180—lethargy or summer sleep of, 181—in Madagascar, XIII. 792—white crocodiles of the Nile, XVI. 268, 270—in Egypt, VIII. 432, 433—in hieroglyphics, XI. 392—crocodile-headed god, *ib.*, n. 6—*Syllogismus crocodilinus*, XIII. 634, n.
Crocodilia, fossil reptiles, XVII. 152—geological distribution of, 154.
Crocodilopolis, VIII. 503.
Crocoisite, mineral, XV. 106.
CROCUS, genus of plants, VII. 506; V. 212.
CRÆSUS, last king of Lydia, VII. 507; XIII. 747.
CROFT (William), VII. 508.
Crofter system, in Inverness-shire, XII. 439.
CROISERS, religious order, VII. 508.
CROISES, or Croizes, pilgrims to the Holy Land, VII. 508.
Croix (St), river, XXI. 893.
— (Ste), on ancient mysteries, XV. 754.
Croker (J. D.), on the salmon fishing of the river Blackwater, in Ireland, IX. 622.
— (Mr), on Pope's quarrel with Lord Harvey, XI. 361.
Croll's gas-retorts, X. 413—his method of purifying gas, 418—gas-meter, 423.
CROMARTY (county), VII. 508. See Ross and Cromarty.
— town, VII. 508—fisheries, XIX. 427; IX. 640, 642.
— Firth, XIX. 425, 794—currents of, XVI. 61—amount of river and tidal water in, 82.
CROMER, town in Norfolk, VII. 508.
— (Archbishop), XII. 475.
CROMFORD, town in Derbyshire, VII. 508—canal, 754.
CROMLECH, or Cromleh, VII. 508; III. 433; XX. 710—in Antrim, III. 284—in Kent, XIII. 68—in Pembrokeshire, XVII. 374.
Crompton (Samuel), his invention of the mule jenny, VII. 444; XX. 510.
Cromwell (Henry), the friend of Pope, XVIII. 327, and n.
— (Henry), his government of Ireland, XII. 486.
— (OLIVER), VII. 509; V. 394, 404 *et seq.*—his military operations in Ireland, 413; VIII. 218; XII. 484—his policy towards Scotland, V. 415—

CRO—CRO

military operations in Scotland, 414—resolves to seize the sovereign power, 416—turns out the Parliament, *ib.*—is declared Protector, 417—the crown offered to him, and refused, *ib.*—his death, 418—and character, *ib.*—indignities to his remains, 421—alleged weight of his brain, III. 52—at Glasgow, X. 647—his patronage of Dr Owen, XVII. 31—his policy towards Jamaica, XII. 673; Holland, XI. 576—his navy, XVI. 92, 93—newspapers under, 182—post-office under, XVIII. 405.
CROMWELL (Richard), VII. 516—succeeds his father as Protector, V. 419.
— (THOMAS), earl of Essex, VII. 516; VIII. 702, 704.
CRONIA, ancient festival, VII. 516.
CRONSTADT, VII. 517; XVII. 487; XIX. 535—chart of, VII. Plate.
— town in Transylvania, VII. 517.
Cronstedtite, mineral, XV. 79.
Crop of birds, III. 109; XVI. 734—of insects, IX. 51.
Crops, II. 306—preparation of land for, 287—rotation or succession of, 292, 416; V. 98—grain, II. 306—root, 315—herbage and forage, 322—quantity of mineral matters and nitrogen taken from the land by different grain crops, 417—principal, cultivated in England and Wales, VIII. 723; in France, X. 246—extent of land in England and Wales under crop in 1852–53, VII. 396; in Ireland, in 1854, 1855, XII. 515, 516—acreage and produce of the principal crops in Scotland, XIX. 796, 797.
CROSIER, or Crozier, VII. 518.
CROSLET, VII. 518; XI. 329.
CROSS, VII. 518—history of the supposed true cross, 519—trampling on, in Japan, XII. 697—St Andrew's, III. 134.
— exaltation of the, VII. 520—cross-bearer—pectoral—order of the—St George's, *ib.*
— in heraldry, VII. 520; XI. 328.
— invention of the, VII. 520—fiery cross of the Scottish Highlanders, 485.
— (St), hospital, XXI. 880.
Cross-bills, birds, XVI. 761.
CROSS-BOW, VII. 520; V. 251; III. 424.
CROSS-moline, in heraldry, XI. 326.
CROSS-stone, mineral, XV. 77.
CROSS-TREES of a ship, VII. 520.
Crosse (Andrew), on the electricity of the atmosphere, VIII. 578—his experiments in electro-chemistry, XXI. 632—his water battery, 619.
Crosses of Queen Eleanor, III. 481.
Crossing, of species, III. 174—effect of, in horses, XI. 635; in hounds, 766—cross breeds of cattle, II. 341; of sheep, 347; of plants, XI. 702.
Crossings, on railways, XVIII. 776.
Crosskill's clod-crusher, II. 273.
Crossocheilos, genus of fishes, XII. 257.
Crossorhinus, genus of fishes, XII. 323.
CROSSOSTOMA, fossil mollusks, XVII. 109, 110.
Crotalocrinus, fossil echinoderms, XVII. 98.
CROTALUM, VII. 520.
CROTALUS, rattlesnakes, VII. 520; XIX. 68—skull, teeth, and poison-fang of, XVI. 432. See Rattlesnake.
CROTCH (William), doctor of music, VII. 520—on the music and musical instruments of Java, XII. 706, 707.
CROTCHET, in music, VII. 521—in printing, *ib.*
Croton aqueduct, III. 337; XVI. 231.
— or Crotona, city of Magna Græcia, VII. 521—academy of antiquities at, II. 69—coins of, XVI. 363—Pythagoras' residence at, XVIII. 710—war of the Sybarites with, XX. 891.
— oil, VII. 521; V. 206; XVI. 495.
Crotophaga, genus of birds, XVI. 779.
CROUP, VII. 521.
CROUSAZ (Jean Pierre de), VII. 522—influence of Locke's doctrines on, I. 106—his principles mistaken by Pope and

CRO—CRY

Warburton, *ib.*, n. 4—Gibbon's opinion of, *ib.*—on beauty, IV. 538—on Pope's Essay on Man, XXI. 728.
CROW, VII. 522—bald, XVI. 749—carrion, 744—hooded, *ib.*—red-legged, 771.
— in mechanics, VII. 522—crow's bill—crow's feet, *ib.*; IX. 809. See Caltrop.
Crowberry order of plants, V. 205.
Crowgarth, iron mine at, VII. 577.
CROWLAND, VII. 522—Abbey, XIII. 492.
CROWN, VII. 522—in heraldry, XI. 335—different kinds of Roman coronæ, VII. 522, 523.
— clerical tonsure, VII. 523.
— glass, manufacture of, X. 661.
— in astronomy, VII. 523.
— in geometry, VII. 523.
— office, VII. 523. See Coroner.
CROYDON, in Surrey, VII. 523; XX. 837—canal, *ib.*—roof of the railway, XIX. 395.
Crozier (Captain), X. 298, 474; XVIII. 171.
CROZOPHORA, genus of plants, VII. 523.
CRUCIBLE, VII. 523—in brass-making, V. 277.
— furnaces, X. 357.
CRUCIFERA, nat. order of plants, VII. 523; V. 182—region of, 227; XVII. 627.
CRUCIFIX, VII. 523.
CRUCIFIXION, VII. 523, 518—in Japan, XII. 693.
CRUDEN (Alexander), VII. 523—his Concordance, 228.
Cruelty, as a ground of divorce, VIII. 71.
— to animals, III. 177, 178; XII. 33.
Cruze (Mr), on ship-building, XX. 182—article on, in the previous edition of this work written by, *ib.*; 135.
Cruikshanks, on the voltaic pile, I. 966—his galvanic trough, XXI. 611—on the chemical effects of voltaic electricity, 628.
Cruikshank, on the lymphatic vessels, II. 766, 803 *et seq.*—on lymphatic glands, 805, 806—on the skin, 834.
Cruives, for catching salmon, IX. 617.
Crum (Walter), his mode of using bleaching powder, IV. 763—on indigo, VIII. 301.
Crumlin viaduct, XII. 597.
Crusaders, Gothic architecture probably introduced by them from the East, III. 446—their armies, 635—their operations in Egypt, VIII. 479 *et seq.*—their wars with Saladin, 481 *et seq.*; XVII. 196—their capture of Jerusalem, XII. 734; XVII. 196—their cruelties to the Jews, XII. 778—Sidon captured by, XX. 270—in Syria, 911—were the first Europeans who saw negroes, 320—probably introduced sugar into northern Europe, 791.
CRUSADES, VII. 524, 317; III. 635; VI. 605; VIII. 480 *et seq.*; XII. 734; XVII. 196, 197—licentious morals introduced by, VI. 610—preached by St Bernard, IV. 669—their influence on geography, X. 469—promoted heraldry, XI. 321—their effects in Italy, XII. 645—orders of knighthood originated with, XIII. 111—Peter the Hermit's advocacy of, XVII. 483.
CRUSCA, Academia della, VII. 536; II. 70; XII. 661; IX. 666.
Crushing, power of bodies to resist, XX. 718, 759.
CRUSTACEA, VII. 537—distinguished from allied classes, III. 367—their use for food, IX. 765—in the Greenland seas, XI. 43—fossil, XVII. 100, 101, 640.
CRUSTMERIUM, VII. 544.
CRUTH, a Welsh musical instrument, VII. 544.
Cruveilhier (T.), his descriptive anatomy, II. 769—on the Pacinian corpuscula, 817.
CRUZADO, Portuguese gold coin, VII. 544; XV. 442, 444.
Crwth. See Cruth.
CRYOLITE, mineral, VII. 544; XV. 93.
CRYOPHORUS, VII. 544; XI. 271.

CRY—CUB

CRYPT, VII. 545—Crypta, *ib.*
Cryptangia, fossil corals, XVII. 97.
Crypticus, genus of insects, IX. 130.
Cryptoccephalus, genus of insects, IX. 149.
Cryptocerus, genus of insects, IX. 194.
Cryptodon, fossil mollusks, XVII. 107.
Cryptodontia, fossil reptiles, XVII. 141.
CRYPTOGAMIA, VII. 545—arrangement and characters of, V. 216.
Cryptogamic plants, V. 76—embryogeny in, 155.
CRYPTOGRAPHY, VII. 545.
Cryptolite, mineral, XV. 101.
Cryptomycteres, section of fishes, XII. 232.
Cryptonyx, genus of birds, XVI. 791.
Cryptopoda, crustacea, VII. 541.
Cryptops, genus of myriapods, XV. 750.
Cryptusa, genus of insects, IX. 189.
CRYSTAL, VII. 545—crystals, in mineralogy, XV. 40—dichroism of, I. 915—cavities in, VII. 549; XIV. 806—Sir H. Davy on the fluids in the cavities of, 672—Beccaria on double refraction in, IV. 560—their property of dividing rays of light, XIII. 452—of snow, XIV. 659—imperfections of, XV. 49—measurement of, 50—twin-crystals, 51—irregular aggregation of, 53—biaxial crystals, I. 913; XVI. 541—double refraction in crystals with one axis, 626, 629; in crystals with two axes, 630, 631; I. 905; with three, XVI. 633; with planes of double refraction, *ib.*—singly polarizing crystals, 647—rings produced by uniaxial, 651; by biaxial, 652—conical refraction in biaxial crystals, 656—with planes of double refraction, 661—composite, *ib.*—as microscopic objects, XIV. 806. See Crystallization, Optics.
— or flint-glass, X. 672.
— Palace, IX. 454—Phillip's Guide to, and Picture Gallery of, XVII. 515—of New York, XVI. 225—at Sydenham, XX. 891.
CRYSTALLINE, VII. 545—heavens, *ib.*—derivation of crystalline forms, XV. 42; relation of optical characters to, I. 914—rocks, XV. 136; XVIII. 619; in Scotland, XIX. 791.
— lens of the eye, VII. 545; III. 44; XIII. 461; XVI. 541—in various animals, III. 95—in fishes, XIV. 771, 805.
CRYSTALLIZATION, VII. 545; VI. 445; XV. 129—of snow, XIV. 659—methods employed to produce, VI. 447—systems of, XV. 41—structure of, producing polarization, XVI. 681. See Crystals, Optics.
Cshatriyas, caste, VI. 318; XI. 471.
Ctenacanthus, genus of fossil fishes, XII. 339; XVII. 117.
Ctenicer, genus of insects, IX. 106.
Ctenistes, genus of insects, IX. 153.
Ctenodes, genus of insects, IX. 144.
Ctenodonta, fossil mollusks, XVII. 106, 105.
Ctenodus, genus of fossil fishes, XII. 341.
Ctenoid order of fishes, XII. 216—fossil, 333, 343; XVII. 127.
Ctenoidel, order of fossil fishes, XII. 343; XVII. 127.
Ctenolabridæ, family of fishes, XII. 265.
Ctenolabrus, genus of fishes, XII. 267.
Ctenolepis, genus of fossil fishes, XII. 337.
Ctenomys, fossil species of, XVII. 173.
Ctenophora, genus of insects, IX. 227.
Ctenopoma, genus of fishes, XII. 290.
Ctenoptychius, genus of fossil fishes, XII. 340.
Ctenostomata, polypes, XXI. 1002.
Ctenus, genus of arachnides, III. 382.
Cteristes, XI. 385.
CTESIAS, Greek physician, VII. 564—his notice of Nineveh, XVI. 273—his skill in surgery, XX. 811.
CTESIBIUS, VII. 564—hydrodynamical inventions of, XII. 69.
CTESIPHON, Assyrian city, VII. 564; XVII. 435.
— a Cretan artist, VII. 564.
CUB, VII. 564.
CUBA, VII. 564; XXI. 837—population of, II. 708—metallic produce of, XV. 248—Poey's work on the lepidoptera of, IX.

CUB—CUL

18—sugars of, XX. 795, 796—its tobacco, XXI. 294, 295—weights and measures of, 810.
 Cuban, mineral, XV. 117.
 Cubature of solids, IX. 734.
 CUBE, VII. 569; X. 535—its frequency in crystalline forms, VI. 445—in mineralogy, XV. 41.
 —ore, XV. 102.
 Cube-root, VII. 569—extraction of the, III. 606—discovered by the Arabians, I. 699.
 CUBEBS, VII. 569; V. 207; XVII. 404.
 Cubic equations, II. 516—resolution of, IX. 302.
 Cubical coal, VII. 118.
 CUBICULARII, VII. 569; VI. 408.
 Cubières (Despans), accused of corruption, X. 228.
 CUBIT, VII. 569; VIII. 517; XXI. 804.
 —bone, III. 32.
 Cubitt (Sir William), on canals, XVI. 56—river navigation, 63.
 Cuboit, mineral, XV. 75.
 Cuchullin hills, in Skye, XX. 317.
 Cuckmere, river in Sussex, XX. 839.
 CUCKOO, VII. 569; XVI. 777—honey-cuckoo, II. 218—Dr Jenner's paper on, XII. 721.
 Cuckoo-pint, plant, V. 214, 115.
 Cucujus, genus of insects, IX. 143.
 Cucullæa, genus of mollusks, XV. 349—fossil, XVII. 106.
 Cucullanus, genus of entozoa, XXI. 981.
 Cuculus, genus of birds, XVI. 777.
 Cucumber, V. 193—culture of, XI. 735.
 —squirting, V. 193.
 Cucumiformes, echinoderms, XXI. 986.
 CUCUMIS, genus of plants, VII. 569; V. 193.
 Cucurbitaceæ, nat. order of plants, V. 192.
 CUDBEAR, dyestuff, VII. 569; V. 217; VIII. 285, 286; XIII. 515.
 CUDDALORE, in Hindustan, VII. 569.
 CUDDAPAH, in Hindustan, VII. 569, 570.
 Cuddy, fish, XII. 269.
 CUDWORTH (Ralph), VII. 570; I. 341—on moral distinctions, 20, n. 3—one of the first successful antagonists of Hobbes, 43—on perception, ib., n. 3—influence of his principles on theories of morals, 44—his Intellectual System, ib., 341—his Treatise concerning Eternal and Immutable Morality, 342, 192, n. 3—his unpublished MSS., 192, n. 3, 342; VII. 570—on the materiality of angels, III. 309, n.—on the philosophers who maintained that moral distinctions were created by human law, XV. 549—on the obligation of subjects to obey their rulers, XV. 550.
 CUENCA, in Spain, VII. 570.
 —town in Ecuador, VII. 570—valley of, VIII. 386.
 CUFF (Henry), VII. 570.
 Cuiaba, XIV. 358.
 CUIRASS, VII. 570; III. 665 and n.
 CUIRASSIERS, VII. 571.
 CUISSÉS, VII. 571.
 CUJAS, or Cujacius (Jacques), civilian, VII. 571—his editions of the Theodosian Code, VI. 744—Fabrot's edition of his works, IX. 466.
 CULDEES, VII. 573; XII. 441; XIX. 750.
 Culello sandstone, XX. 711—its resistance to crushing, 718.
 CULEUS, Roman measure, VII. 573.
 Culex, genus of insects, IX. 224.
 Culinary utensils, XV. 440.
 CULLEN, in Banffshire, VII. 573; IV. 412.
 —(Dr WILLIAM), VII. 573; XIV. 462—his connection with Dr Black, IV. 737—Brown's opposition to his medical doctrines, V. 682—his definition of insanity, XIV. 526—his connection with Dr W. Hunter, XII. 29, 30—on Stahl's system of medicine, XX. 532.
 CULLERA, Spanish town, VII. 575.
 Culley (Messrs), their improvements in agriculture, II. 263.
 Culling and Bradford's photo-lithographic process, XVII. 554.
 CULLODEN, in Inverness-shire, VII. 575; XII. 440—battle of, V. 461.

CUL—CUP

CULM, stem of grasses, VII. 575; V. 78.
 —variety of coal, VII. 575, 44—measures, XV. 204—in Pembrokeshire, XVII. 374.
 CULMINATION, VII. 575.
 CULNA, in Hindustan, VII. 575.
 CULPEE, town in Bengal, VII. 575.
 CULROSS, in Perthshire, VII. 575; XVII. 459.
 Cultellus, genus of mollusks, XV. 350.
 Cultrirostres, tribe of birds, XVI. 797.
 CULVERIN, VII. 575.
 CULVERT, VIII. 575.
 CULVERTAILED, VII. 575.
 CUMÆ, or Cuma, VII. 575; XV. 782; XIX. 304—sibyl of, XX. 294; II. 648.
 CUMANÁ, in Venezuela, VII. 576; XXI. 537.
 Cumanus (Marcellus), the first author who describes the venereal disease, XX. 817, n. 3.
 CUMBERLAND, VII. 576—Cambrian rocks of, XV. 196—Cambro-silurian rocks, 197—Upper Silurian, 198—state of bastardy in, XVIII. 296, n. 3—its annexation to Scotland, XIX. 745—population and value of property, VIII. 754.
 —(RICHARD), bishop of Peterborough, VII. 578; I. 339—his work *De Legibus Naturæ*, 46, 339—the only professed answerer of Hobbes, 339—his ethical doctrines, 340; XV. 553.
 —(RICHARD), dramatist, VII. 581—his comedies, VIII. 166—his novels, XIX. 275.
 —(William, Duke of)—his proceedings in Flanders and Scotland, V. 460, 462, 464—his death, 470.
 —capital of Alleghany county, North America, VII. 578.
 —in New South Wales, IV. 278, 282, 284.
 —presbyterians, in America, XVIII. 492.
 —river in North America, VII. 578; XIII. 69; XXI. 155—mountains, ib.
 CUMBRAE, islands, VII. 584; VI. 27.
 Cumbrian rocks, XXI. 842.
 Cuming (Hugh), his collection of shells, XV. 328—on the anatomy of *Discina lamellosa*, 339.
 CUMMIN seeds, VII. 584.
 Cumming (Mr), his escapements, VII. 13.
 —(Professor), on thermo-electricity, XXI. 650, 653.
 —(Rev. J. G.), his description of the Isle of Man, XIV. 242, 243.
 CUMNOCK, village in Ayrshire, VII. 584.
 Cumulo-stratus, cloud, XIV. 656.
 Cumulus, cloud, XIV. 655.
 Cundinamarca, in New Granada, X. 797.
 CUNEGO (Domenico), VII. 584.
 CUNEIFORM, VII. 584—bones, III. 36—cartilages, 50.
 —inscriptions, VII. 584; XVII. 530—at Nineveh, XVI. 272, 275—discovery of the key to, XVII. 534.
 Cuneo, in the kingdom of Sardinia, XIX. 640.
 Cunette, in fortification, VII. 602.
 CUNINA, goddess, VII. 584.
 Cunio, block-printing by, XVIII. 522.
 CUNITZ (Maria), VII. 584.
 CUNNINGHAM (Allan), poet, VII. 589; XVIII. 127.
 —(ALEXANDER), civilian, VII. 584.
 —(ALEXANDER), historian, VII. 588.
 —(Allan), botanist, his explorations in the interior of Australia, IV. 255—death, 256.
 —(John), on impressions on rocks, XVII. 131.
 —(Peter), his Handbook of London, XIII. 674.
 —(district of), IV. 332.
 Cunobeline, ancient British king, his improvement of the coinage, VII. 70; XVI. 362.
 CUNOCEPHALI, VII. 589; XI. 386, n. 4.
 —See Anubis.
 Cunoniaceæ, nat. order of plants, V. 194.
 CUPAR-ANGUS, VII. 589.
 CUPAR-FIFE, VII. 589; IX. 545, 546.

CUP—CUR

CUPEL, VII. 590; III. 770—Cupellation, ib.; XIII. 299.
 Cuphic letters, II. 616.
 CUPID, VII. 590.
 CUPOLA, in architecture, VII. 590; III. 410, 508. See Dome.
 —furnace, XII. 545.
 CUPPING, VII. 590—cuppers, XIV. 464. See Bloodletting.
 CUPREOUS, VII. 590.
 —manganese, XV. 112.
 Cupressinae, plants, V. 209.
 CUPRESSUS, genus of coniferous plants, VII. 590; V. 209.
 Cuprite, XV. 112.
 Cuproplumbite, XV. 117.
 Cupuliferæ, nat. order of plants, V. 208.
 Cupulispongia, fossil sponges, XVII. 93.
 CURAÇOA, island, VII. 590.
 —a liqueur, IX. 760.
 Curassoes, birds, XVI. 758.
 CURATE, VII. 590; VIII. 743.
 CURATOR, VII. 590—of a university, 591.
 CURATOIRES, various kinds of, VII. 591.
 CURB, VII. 591—in building, V. 739.
 —the, in domestic animals, XXI. 559.
 Curby-hocked, XXI. 559.
 CURCAS, VII. 591.
 Curculio, genus of insects, IX. 139; XXI. 549.
 Curculionites, tribe of insects, IX. 138.
 CURCUMA, genus of plants, VII. 591; V. 211.
 CURD, VII. 591—management of, in cheesemaking, 625.
 CURES, ancient town of Sabinum, VII. 591.
 CURETES, VII. 591, 422, 493, 615; VI. 46.
 Cureton (Rev. Mr), on the Epistles of Ignatius, XII. 360.
 —(Dr), palimpsests deciphered by, XVII. 210, 214.
 CURFEU, or Curfew, VII. 591.
 CURIA, VII. 591; XIX. 296, 316.
 CURIATIL, VII. 592.
 Curlees, language of, XIII. 217.
 Curimatus, genus of fishes, XII. 246.
 CURIO, VII. 592.
 CURIOSI, VII. 592.
 CURISCHE-HAFF, VII. 592; XVIII. 662, 676.
 CURLEW, VII. 592; XVI. 802.
 CURLING, VII. 592.
 Curll, XVIII. 332, 333.
 CURMI, ancient liquor, VII. 592.
 CURT (Mr John), his improvements in mining machinery, VII. 126—his ropes, XIX. 408, 410.
 Curragh of Kildare, XII. 81.
 CURRAH, in Hindustan, VII. 592.
 CURRAN (John Philpot), VII. 592.
 CURRANT, VII. 593; V. 194—culture of curtants, XI. 717—in Greece, 16—in Ionian Islands, XII. 445, 453—value of the imports of, VIII. 734—raisins of, XVIII. 799.
 CURRENCY, VII. 593—suppression of small notes in 1826, V. 644—limit of depreciation in a gold or mixed, XV. 427—amount of gold and silver employed in the currency of Great Britain, XVIII. 465—of Chile, VI. 552; Canada, 155; South Australia, IV. 297; Victoria, 292; New South Wales, 285; Ireland, XII. 526; Cuba, VII. 567; France, X. 262; Norway, XVI. 328; Greece, XI. 15; the Two Sicilies, XX. 249; Spain, 491; Turkey, XXI. 384; Tuscany, 394. See Coin, Coinage, Commerce, Credit, Exchange, Numismatics, Money.
 CURRENT, VII. 593—marks made by currents on rocks, XV. 159—velocity of river currents, XVI. 78.
 —(electric), XXI. 100 and n. 1—intensity of, 622—direction of, 622—derived, 624—mutual action of, 639. See Electricity.
 CURRENTS of the ocean, VII. 593; XIV. 652; X. 483; XVII. 577—of the Mediterranean, XIV. 470—of the Firth of Forth, IX. 793—of the Straits of Gibraltar, X. 620—tide currents, XVI. 66—of the Pacific Ocean, XVII. 40—in the Polar Regions, XVIII. 176.

CUR—CUT

CURRICULE, VII. 593.
 CURRICULUM, VII. 593—in universities, XXI. 475 *et seq.*
 CURRIE (James), M.D., VII. 593—on bathing, IV. 500 *et seq.*—his acquaintance with Dr Brown, V. 683—his Life of Burns, VI. 20.
 CURRIER, VII. 595. See Currying.
 CURTICA, genus of birds, XVI. 756.
 CURRY-COMB, VII. 595.
 CURTY-powder, IX. 765—adulterations of, 770.
 CURRYING of leather, VII. 595; XIII. 309.
 CURSITOR, VII. 595—baron, ib.
 Cursoria, family of insects, IX. 155.
 Cursorius, genus of birds, XVI. 797.
 Curt (M.), his report on Cherbourg breakwater, V. 302.
 CURTAIN, in fortification, VII. 595.
 CURTESY, in Scotch law, VII. 595.
 Curtis (Dr), his letter to Duke of Wellington on Catholic emancipation, V. 654.
 —(G. T.), on the American constitution, XXI. 755.
 —(J.), his works on insects, IX. 14—on insects, 82, 86 *et seq.*
 —(Port), IV. 301.
 —(W.), his works on insects, IX. 6.
 CURTIUS (Mettus, or Metius), VII. 595.
 —(RUFUS QUINTUS), VII. 595—his account of the Amazons, II. 651.
 CURULE-CHAIR, VII. 596—curule magistrates, XIX. 316.
 CURVATURE, of a line, VII. 596—of the conic sections, 285—radius of, IX. 706—curvature of beams, XX. 762.
 Curved motion, VIII. 357 *et seq.*
 CURVES, in geometry, VII. 596—of equable approach, ib.—algebraical or geometrical, ib.; II. 545—transcendental or mechanical, VII. 596; II. 545—anticlinal and synclinal, in geology, XV. 170—caustic, VI. 344—involution and evolution of, VIII. 359—determination of tangents to, IX. 701—generation of, by evolution, 706—contact of, 709—quadrature of, 731—rectification of, 733—determination of the equations to curves from the knowledge of their properties, X. 543; of their forms and properties from their equations, 545—deduction of properties of curves from their equations and known properties, 551—elastic, IV. 672—curves on the surface of a fluid in capillary tubes, VI. 214, 215—magnetic, XIV. 46.
 Curwen (Mr), on the effects of the cottage-system in Ireland, VII. 431.
 CURZOLA, island, VII. 596.
 Curzon (Hon. Robert), his work on the Monasteries of the Levant, XIII. 384—on MSS. in Italian libraries, 416, 417.
 CUSA (Nicolo de), VII. 596—on geometry, X. 504—on the squaring of the circle, XX. 520.
 Cuscutaceæ, nat. order of plants, V. 201.
 CUSH, VII. 596; VIII. 45.
 Cushat, bird, XVI. 793.
 CUSHION, in engraving, VII. 596; VIII. 802—in gilding, X. 625.
 CUSP, in astronomy, VII. 596—in astrology, ib.—in architecture, ib.; III. 508.
 CUSPINIAN (John), VII. 596.
 Custard-apple, order of plants, V. 180.
 CUSTOM, in a legal sense, VII. 597—a source of law, XIII. 258—its influence on morals, 259; XV. 543—its influence in China, VI. 593.
 CUSTOM-HOUSE, VII. 597—fallacy of custom-house returns, 190, 192—London, XIII. 662.
 CUSTOMS, VII. 597—duties, XXI. 59, 62, 63—articles on which the customs are repealed, 62—not inconsistent with free-trade, ib.—amount of, in the port of London, XIII. 662—Consolidation Act, VIII. 737—of Scotland, XIX. 808.
 CUSTOS BREVIUM—Rotulorum, VII. 597.
 Cutaneous affections, in domestic animals, XXI. 578.
 Cutbush's electrical lamp, VIII. 625.
 CUTCH, or Terra Japonica, VII. 597; VI. 332.

CUT—CUY

- CUTCH, in Hindustan, VII. 597; XI. 446, 449, 463.
 — GUNDAVA, in Beloochistan, VII. 599; IV. 640, 641.
 CUTHAN, VII. 599.
 Cuthbert (Mr), optician, XIV. 786—his microscope, *ib.*
 Cuthbert's (St), beads, XVII. 98.
 Cuthbertson (Mr), his electrical apparatus for oxidating metals, VIII. 593—his experiments with it, *ib.*—his electrical kites, 608—his condenser of electricity, 614—his balance-electrometer, 620—his air-pump, XVIII. 43.
 Cuthill (James), his work on the cultivation of the potato, II. 316, *n.* 1.
 CUTICLE, VII. 600; II. 834, 836; XIII. 305—of the mucous membrane, II. 836—the seat of colour in the human species, VII. 223—of plants, V. 74—appendages of, *ib.*—in the crustacea, VII. 537.
 Cutler (Mr), his patent fire-place, XX. 353.
 Cutlers, diseases of, XIV. 442—Company and Feast, XX. 97.
 CUTLERY, VII. 600—of Sheffield, XX. 96—Switzerland, 890—Namur, XV. 772.
 Cutlu-Moses, VII. 314, 316.
 CUTTACK, in Hindustan, VII. 602; IV. 651.
 CUTTER, VII. 602; IV. 800.
 CUTTERAH, in Bengal, VII. 602.
 Cutting of diamonds, VIII. 4, 813.
 — in horses, XXI. 562.
 Cuttings, propagation by, XI. 693, 694, 703; V. 167; XVII. 767.
 — in railways, &c., VII. 324, 325; XVIII. 759.
 Cutting's rope-machine, XIX. 410.
 CUTTLE-FISH, VII. 602; XV. 398—fossil, XVII. 113.
 CUTTS (John, Lord), VII. 602.
 CUVETTE, in fortification, VII. 602.
 CUVIER (G. Leopold-Christian-Frederic-Dagobert), VII. 602—on Bonnet's definition of moral liberty, I. 268—his method of estimating the relative proportions of the skull and face, II. 80—his works on comparative anatomy, and on fossil bones, III. 113—on the classification of animals, 172, 173, 183, 192—on the study of science by persons of rank in Britain, VI. 350—on the character of Cavendish, 354, 355; and of Ray, XIV. 125—his *Regne Animal*, 127—on Spix's craniological views, XVI. 501—on birds, 729, 730—his merits as a zoologist, *ib.*—on the differences between animals and plants, III. 170—on the harmony of organs in animals, 172—the benefits he has conferred on natural history, 183—on living beings proceeding from others of the same kind, 175—his classification of arachnides, 367—on the infusoria, 194—on the progress of ichthyology, XII. 204 and *n.* 2—on fishes, 204, 205 *et seq.*—his criticism on Gmelin's *Systema Nature*, X. 685; XVI. 729—on the scientific value of glass, III. 198—on the mollusca, XV. 319, 320 *et seq.*—on the annelides, XI. 293, 294—on the teeth, XVI. 408 *et seq.*—his system of odontology, 478; objections to it, 479, 480—on the plesiosaurus, XVII. 146—on the restoration of extinct mammals from their osseous remains, 156, 157, 159, 160, 171—on Pliny's *Natural History*, XVIII. 11—on reptiles, XIX. 15, 16, 23, 24 *et seq.*—on zoophytes, XXI. 973 *et seq.*—his arrangement of intestinal worms, 981.
 — (Frederick), his amendment of the Linnæan system of zoology, III. 183—on the teeth, XVI. 409.
 — and Valenciennes, their joint work on fishes, XII. 204, *n.* 2, 328.
 Cuvieria, genus of mollusks, XV. 360.
 CUXHAVEN, in Germany, VII. 606; XI. 199.
 Cuyahoga, river, XVI. 489.
 Cuyp (Albert), XIII. 137. See Kuyp.

CUY—CYL

- Cuzco, in Peru, VII. 606; XVII. 470, 474, 593—temple of the sun at, 461.
 Cyami, crustacea, VII. 542.
 Cyanic acid, VI. 474.
 Cyanichthys, genus of fishes, XII. 314.
 Cyanite, mineral, XV. 86.
 Cyanogen, VI. 473—specific gravity of, XII. 89.
 Cyanogene, gas, XIV. 438.
 CYANOMETER, VII. 606; XVI. 692; XIX. 653.
 Cyanose, mineral, XV. 97.
 Cyanuric acid, VI. 474.
 Cyathaxonidæ, polypes, XXI. 1005.
 Cyathophyllidæ polypes, XXI. 1005—fossil, XVII. 96.
 Cyathophyllum, fossil corals, XVII. 96.
 CYATHUS, ancient measure, VII. 606.
 CYAXARES I., king of Media, VII. 606; XIV. 421; XVII. 433.
 — II., Persian king, VII. 606.
 CYBEBE, VII. 606.
 CYBELE, VII. 606; I. 457—her priests, VII. 422.
 Cybium, genus of fishes, XII. 296—fossil, 345.
 Cycadaceæ, nat. order of plants, V. 210—in Africa, II. 216—fossil, V. 236; XVII. 641.
 Cycas, genus of plants, V. 210.
 CYCEON, VII. 607.
 Cychla, genus of fishes, XII. 265.
 Cychrus, genus of insects, IX. 96.
 CYCLADES, islands, VII. 607; XI. 10, 13, 19.
 Cycladidæ, family of mollusks, XV. 350; XVII. 107.
 Cyclarthurus, genus of fossil fishes, XII. 342.
 CYCLAS, VII. 607.
 — genus of mollusks, XV. 347, 350.
 CYCLE, VII. 607; VI. 664—of indiction, VII. 607; VI. 81, 673—of the moon, VII. 607; VI. 81—solar, VII. 607; VI. 80—Druidical, VIII. 186—Egyptian, 450, 451.
 Cyclica, genus of insects, IX. 148.
 Cyclichthys, genus of fishes, XII. 314.
 Cyclidium, genus of animalcules, III. 201.
 Cyclobranchiata, mollusks, XV. 379—fossil, XVII. 127.
 Cyclogonoidæ, fossil fishes, XVII. 126.
 CYCLOID, VII. 607; I. 555; X. 545—first indicated by Galileo, VII. 267; X. 505—Pascal's solution of the problems relating to, XVII. 324.
 — order of fishes, XII. 216—fossil, 333, 345.
 Cycloidei, order of fossil fishes, XII. 345, 346—acanthopterygei, 345—malacopterygei, 346.
 Cyclo-labridæ, or cyclo-labroids, fishes, XII. 265, 266.
 Cyclomus, genus of insects, IX. 139.
 Cyclones, or whirlwinds, XIV. 649.
 CYCLOPÆDIA, VII. 607; VIII. 654.
 CYCLOPEAN, VII. 607, 420; III. 432, 440; XI. 21; XIX. 642; XX. 710.
 Cyclopoma, genus of fossil fishes, XII. 343.
 CYCLOPS, VII. 607—quadricornis, 543.
 Cyclopterus, genus of fishes, XII. 306, 307.
 Cyclostoma, genus of mollusks, XV. 375—fossil, XVII. 11.
 Cyclostomata, polypes, XXI. 1002.
 Cyclostomidæ, family of mollusks, XV. 375.
 Cyclostyle, in architecture, III. 508.
 Cyclurus, genus of fossil fishes, XII. 347.
 CYDER, VII. 607. See Cider.
 CYDIAS, painter, VII. 607.
 CYDNUS, river, VII. 607; VI. 722.
 CYDONIA, VII. 607, 41.
 — the quince, VII. 607. See Quince.
 CYGNUS, VII. 607; XVI. 815.
 — constellation, VII. 607; IV. 79.
 Cylas, genus of insects, IX. 138.
 CYLINDER, in geometry, VII. 607; X. 540, 558—development of the curve surface of, 495—cylindric saws, XIX. 678—cylinder valves of steam-engines, XX. 581—sections and development of, in masonry, 727, 728—to find the lines

CYL—CYR

- when it is intersected by a portion of a cone, 731.
 Cylinders, boring of, V. 43—mensuration of, XIV. 514—of steam-engines, XX. 597 *et seq.*
 Cylindrical egg-end steam-boiler, XX. 615—double-flue boiler, 616.
 CYLINDROID, VII. 607.
 CYLLENE, VII. 607; XI. 11.
 Cyllenia, genus of insects, IX. 234.
 Cylon's conspiracy at Athens, IV. 194.
 CYMA and Cymatium, in architecture, VII. 607; III. 468, 476, 508.
 Cymba, genus of mollusks, XV. 364.
 CYMBAL, VII. 607; XV. 713.
 Cymbirhynchus, genus of birds, XVI. 757.
 Cymbulia, genus of mollusks, XV. 360.
 Cyme, in botany, V. 116.
 Cymindis, genus of birds, XVI. 743.
 Cymophane, mineral, XV. 87.
 Cymothoda, crustacea, VII. 542.
 Cymri, XXI. 685.
 CYNÆGIRUS, VII. 607.
 CYNANCHE, disease, VII. 607.
 CYNANCHUM, genus of plants, VII. 608; V. 199.
 CYNARA, genus of plants, VII. 608; V. 197. See Artichoke.
 Cynarocephalæ, sub-order of plants, V. 197.
 CYNICS, VII. 608.
 Cynips, genus of insects, IX. 192.
 Cynocephali, VII. 589.
 Cynocephalus, genus of mammalia, XIV. 141—dentition of, XVI. 456.
 Cynodon, genus of fishes, XII. 247.
 Cynogale, dentition of, XVI. 460.
 CYNOPHONTIS, Grecian festival, VII. 608.
 Cynopolis, ancient Egyptian city, III. 288.
 Cynoptamus, genus of fishes, XII. 247.
 CYNOSARGES, in ancient Athens, VII. 608; IV. 170.
 CYNOSCEPHALÆ, mountains in Thessaly, VII. 608.
 — battle of, XIX. 312.
 CYNOSURA, VII. 608.
 CYNOSURE, constellation, VII. 608.
 CYNTHIA and Cynthus, VII. 608.
 — genus of insects, IX. 208.
 — genus of mollusks, XV. 334, 333.
 CYNURIA, VII. 608.
 Cyperaceæ, nat. order of plants, V. 215.
 CYPRONISMUS, ancient mode of punishment, VII. 608.
 Cypræa, genus of mollusks, XV. 384.
 Cypræidæ, family of mollusks, XV. 384—fossil, XVII. 110.
 CYPRESS, VII. 608; XVII. 765; XI. 748—specific gravity of the wood, XII. 89.
 — tribe of plants, V. 209.
 CYPRIAN (Thasius Cœcilus), VII. 608.
 — belonging to Cyprus, VII. 609.
 Cypricardia, genus of mollusks, XV. 350—fossil, XVII. 107.
 Cyprina, genus of mollusks, XV. 350—fossil, XVII. 107.
 Cyprine, XV. 85.
 Cyprinidæ, or Cyprinoids, family of fishes, XII. 256, 255—teeth of, XVI. 425—kinds used for food, IX. 764—Himalayan, XI. 444.
 Cyprinodon, genus of fishes, XII. 252.
 Cyprinodontei, family of fossil fishes, XII. 346.
 Cyprinodontidæ, family of fishes, XII. 252.
 Cyprinoidei, family of fossil fishes, XII. 346.
 Cyprinus, genus of fishes, XII. 257—angling for different kinds of, III. 160, 161.
 Cypris, fossils, XVII. 101—*C. ornata*, VII. 543.
 CYPRIUS, VII. 609—taken by Selim II., XXI. 369—coins of, XVI. 377—wines, XXI. 886.
 — Knights of, VII. 610.
 CYPSELUS, father of Periander, VII. 610, 368.
 — genus of birds, XVI. 758.
 Cyr (St), in France, VII. 610.
 — (St), Gouvion, X. 154, 178.
 Cyran (M. de St), on annuities, XII. 400.

CYR—DAC

- Cyrena, genus of mollusks, XV. 359—fossils, XVII. 107.
 CYRENAICA, in Africa, VII. 610.
 CYRENAICS, VII. 610.
 CYRENE, VII. 611, 610—dispute with Carthage, VI. 281.
 CYRIL (St), bishop of Jerusalem, VII. 611.
 — Patriarch of Alexandria, VII. 611—alphabet of, II. 614.
 Cyrillaceæ, nat. order of plants, V. 185.
 Cyrillo (Dominique), his work on insects, IX. 7.
 Cyrillus Lucaris, Alexandrian MS. presented to Charles I. by, II. 474.
 Cyrtandraceæ, nat. order of plants, V. 200.
 Cyrtia, fossil mollusks, XVII. 103, 104.
 Cyrtoceras, fossil mollusks, XVII. 112.
 Cyrtolites, mollusks, XV. 375—fossil, XVII. 109.
 Cyrtoma, genus of insects, IX. 242.
 Cyrtro-prostyle, in architecture, III. 508.
 Cyrtro-style, in architecture, III. 508.
 Cyrtus, genus of insects, IX. 236.
 CYRUS, VII. 611; XVII. 434—his military achievements, III. 622, 623—capture of Babylon by, IV. 346—his treatment of Cræsus, VII. 507—his restoration of the Jews, XII. 732, 767—his war with the Lydians, XIII. 748—Xenophon's connection with, XXI. 950.
 — the Second, VII. 612—assistance from the Spartans in the expedition against Artaxerxes, XX. 501.
 CYST, VII. 613.
 CYSTIC, VII. 613.
 Cystica, zoophytes, XXI. 978, 976.
 Cysticercus, genus of zoophytes, XXI. 974, 976, *n.* 1, 978.
 Cystidea, in botany, V. 147.
 Cystiphyllidæ, polypes, XXI. 1005.
 Cystiphyllum, fossil corals, XVII. 97.
 Cystoidea, fossil echinoderms, XVII. 99.
 Cystophora, dentition of, XVI. 463.
 CYTHERA, island, VII. 613; XII. 454.
 Cytherea, genus of mollusks, XV. 350—fossil, XVII. 108.
 Cytinaceæ, nat. order of plants, V. 209.
 Cytoblast, V. 67, 73.
 Cyxii, insects, IX. 169.
 CYZICENA, VII. 613.
 CYZICUS, town of Mysia, VII. 613; XV. 751—coins of, XVI. 374.
 CZAR, VII. 613; XIX. 524.
 CZASLAU, town in Bohemia, VII. 613.
 CZEGLÉD, town in Hungary, VII. 613.
 Czech language, IX. 392.
 Czerny (Caspar), his works on insects, IX. 24.
 — (George), XX. 62.

D

- D, letter of the alphabet, VII. 614—in abbreviations, II. 18.
 Daa (Mr), on the languages of America, XIII. 224.
 Dab, fish, IX. 764.
 Dabod, in Nubia, temple at, XVI. 349.
 Dacca, in Bengal, VII. 614—muslin manufactures of, IV. 650; VII. 438, and *n.* 1; partly superseded by British goods, XI. 460.
 — JELALPORE, VII. 614; X. 352.
 DACE, VII. 615—angling for, III. 161.
 Dacelo, genus of birds, XVI. 773.
 DACIA, VII. 615.
 Dacians, their wars with the Romans, XIX. 340, 341—language, XIII. 214.
 DACIER (André), VII. 615.
 — (ANNE LEFÈVRE), VII. 615.
 Dacne, genus of insects, IX. 115.
 Dacnis, genus of birds, XVI. 763.
 Dacotas, their belief as to a future state, II. 681.
 DACTYL, VII. 615; IX. 770.
 Dactylethra, genus of reptiles, XIX. 78.
 DACTYLI IDÆI, VII. 615, 493.
 DACTYLIOMANCY, VII. 615.
 Dactylobranchiata, order of mollusks, XV. 334.
 DACTYLOLOGY, VII. 616, 679.

DAC—DAL

- Dactylopterus, genus of fishes, XII. 280, 282.
 Dactylota, genus of echinoderms, XXI. 986.
 Dacus, genus of insects, IX. 255.
 DADO, VII. 616; III. 508.
 DADUCHI, priests of Ceres, VII. 616.
 DADUR, in Beloochistan, VII. 616.
 DÆDALA, in Lycia, VII. 616.
 DÆDALUS, VII. 616, 494; XIX. 852.
 DÆMON, VII. 616; III. 310; X. 450; I. 458—of Socrates, XX. 390.
 DÆMONIAC, VII. 617—Farmer on demoniacs, IX. 483.
 Daendels (General), IV. 496.
 Daffia, genus of birds, XVI. 818.
 DAGHESTAN, in Asia, VII. 619; VI. 340, 342.
 DAGO, island in the Baltic, VII. 619.
 Dagobert, X. 6.
 DAGON, VII. 619, 716.
 Daguerre (M.), his discoveries in photography, I. 922; XVII. 545, 546.
 DAGUERRETYPE, VII. 619; I. 922, 923; XVII. 545, 546.
 DAHL (Michael), portrait painter, VII. 619.
 — (George), his works on insects, IX. 13.
 Dahlbom (A. G.), his works on insects, IX. 17, 24.
 DAHLIA, VII. 619—culture of, XI. 753.
 Dahlmann on Herodotus, XI. 356.
 DAHOMEY, in Africa, VII. 619; II. 227—tribes of, IX. 352.
 Dahshoor, pyramids of, VIII. 502.
 DAILLÉ (Jean), VII. 620.
 — (M.), his edition of Scaligerana, II. 738.
 DAIMIEL, Spanish town, VII. 621.
 Daimonnisoi, or Prince's islands, XVIII. 518.
 Daines (Mr), his patent for preserving stone, cement, &c., XX. 735.
 DAIRI, Japanese pontiff, VII. 621.
 DAIRY, VII. 621—breeds of cattle, II. 342—dairies in Cheshire, VI. 529; in Argyleshire, III. 527—in Denmark, VII. 747—husbandry of Lombardy, XIII. 651, 652—in Ireland, XII. 518—Lanarkshire, XIII. 175. See Butter, Cheese, Milk.
 DAIS, VII. 626; VI. 327.
 Daisy, as an edging, XI. 748.
 Dajaus, genus of fishes, XII. 291.
 Dalby (Mr), employed on the Ordnance survey, XXI. 331.
 DALECARLIA, in Sweden, VII. 626.
 DALECHAMPS (Jacques), VII. 626.
 D'ALEMBERT, VII. 626. See Alembert.
 DALGARNO (George), VII. 626—author of the first English work on a manual alphabet for the blind, 616—his profound conclusion regarding the senses, I. 248—works of, 285.
 Dalibard on the resemblance between lightning and electricity, VIII. 582.
 Dalin, Swedish author, XIX. 698.
 DALKEITH, VII. 626.
 Dalkey island, VIII. 215.
 Dallas (W. S.), his works on insects, IX. 19.
 Dalman (John William), his works on insects, IX. 13.
 DALMATIA, VII. 626; IV. 311, 309.
 Dalmatian alphabet, II. 614.
 Dalriads, V. 375.
 DALRY, in Ayrshire, VII. 627.
 Dalrymple (Alex.), on the supposed southern continent, IV. 252.
 — (JAMES, Viscount Stair), VII. 627—on the Canon Law, VI. 191—on the reception of the doctrines of Spinoza and Hobbes, I. 165, n. 4—his *Physiologia Nova Experimentalis*, 285.
 — (Sir DAVID), Lord Hailes, VII. 633—on profane swearing in Scotland, VIII. 249, n. 1—list of his works, VII. 635, 636—on John Barclay, IV. 439, 440, 441—his character of Malcolm III. of Scotland, XIX. 748; of David I., 732.
 — (Sir Hugh), VII. 632.
 — (Sir James), VII. 632.

DAL—DAN

- Dalrymple (Sir John), VII. 631, 632.
 — (Thomas), M.D., VII. 632.
 DALTON (John), LL.D., VII. 637; I. 933; XIV. 259—his writings, I. 934—his theory of hygrometry, ib.—on the atmospheric gases, IV. 180, 181; I. 934—dew-point experiment, ib.—on aurora borealis, IV. 246, 248; XIV. 14—on oxymuriate of lime, IV. 763—his atomic theory, VI. 444; I. 935, 936—on evaporation, IX. 408 *et seq.*—on heat, XI. 268 *et seq.*—on the elasticity of aeriform bodies, 270—on the laws of mixed gases, I. 935; his mechanical ideas on this subject, ib.—on the expansion of the gases by heat, ib.; XI. 268—his laws of chemical combination, I. 936—reception of his views in England and France, 938—on the coefficients of expansion of gases, 957, n. 4—contrasted with Cavendish and Black, in his early circumstances, 933—his death and character, 939—on magnetism, XIV. 12, 14, 55, 66—on latent heat, XX. 555—on the elastic force of steam, 557, 558.
 Dalzell (Sir John G.), on holothuræ, XXI. 985.
 DALZIEL (General), V. 428.
 — (Prof.), XXI. 963.
 DAM, VII. 638.
 DAMAGRAM, in Central Africa, VII. 638.
 Damalis, Egyptian deity, XI. 385.
 Daman, in zoology, XIV. 199.
 DAMAR, Arabian town, VII. 638.
 — a kind of resinous exudation from trees, VII. 638—used by varnish-makers, XXI. 526.
 DAMASCENUS (Joannes), VII. 638.
 — (NICOLAUS), VII. 638.
 DAMASCIUS, philosopher, VII. 638.
 DAMASCUS, VII. 638; XX. 901, 904—sword-blades of, VII. 600—fine steel of, 641—gun-barrels, XI. 97—occupied by Saladin, VIII. 480; XVII. 196, 197—taken by Es-Salih, VIII. 483; by El-Mansoor, 484; by Ibrahim Pasha, 495—plain of, XX. 903—pashalic of, 905—Jews, 909—manufactures of, XXI. 383.
 DAMASK, VII. 641—a fine steel, ib.—manufacture of, at Dunfermline, IX. 545.
 DAMASKEENING, VII. 641.
 DAMAUN, in Hindustan, VII. 641.
 DAME, VII. 641.
 DAMELOPRE, VII. 641.
 DAMERGU, in Africa, VII. 641.
 DAMIANUS, martyr, VII. 641, 423.
 DAMIENS (Robert François), VII. 641; X. 36.
 DAMIETTA, town in Lower Egypt, VII. 641; VIII. 479, 483—taken by the crusaders, VII. 526.
 — branch of the Nile, VIII. 426, 430.
 DAMM (Christian Tobias), VII. 641.
 Damman (Adrian), VII. 585.
 DAMMOODAH, river, VII. 641.
 DAMNIL, VII. 642; VI. 64; XIX. 742.
 DAMNONII, VII. 642.
 Damocedes, Greek surgeon, XX. 810.
 DAMOCLES, VII. 642.
 Damoiseau (M.), geometer, I. 826, 827.
 DAMON, VII. 642.
 Damourite, mineral, XV. 78.
 Damp. See Damps.
 DAMPER, VII. 642.
 DAMPIER (William), VII. 642—his discoveries in New Holland, IV. 253, 254—his visit to Papua, 262—New Britain, 264—Bashee islands, 484; Guahan, XVIII. 269.
 Dampierre (General), X. 78 *et seq.*
 Dampness, its effect on the weight and dimensions of bodies, XII. 186.
 DAMPS, in mining, VII. 643, 124, 125, 671. See Fire-damp, Choke-damp.
 DAMSEL, VII. 644.
 DAN, VII. 644; XVII. 185.
 DANACE, ancient Persian coin, VII. 644; VI. 426.
 DANAE, VII. 644.
 Danaeacea, sub-order of ferns, V. 216.
 Danaide wheel, XII. 171.
 DANAIDES, VII. 644.

DAN—DAP

- Danais, genus of insects, IX. 207.
 Danaite, XV. 115.
 DANAUS, VII. 644.
 Danby (Lord Treasurer), V. 427.
 DANCE, or Dancing, VII. 644—French Academy of, II. 69—not practised in China, VI. 581—ardently cultivated by the Cretans and Lacedæmonians, VII. 495—Pyrrhic dance in Crete, ib.—in Egypt, VIII. 443—action of the muscles in, III. 42.
 DANCER (rope), VII. 646; II. 115.
 — (Mr), his microscopic photographs, XIV. 802, 745; XVII. 552.
 DANCES, stage. See Ballet.
 — country, VII. 646.
 DANCETTE, VII. 646.
 DANCING-GIRLS, VII. 646—in Egypt, II. 600; VIII. 448.
 DANDELION, plant, VII. 646; V. 90, 113, 197.
 DANDINI, painters, VII. 646.
 Dandolo (Count), on Lombardy, XIII. 654 *et seq.*
 — (ENRICO), doge of Venice, VII. 646, 768.
 Dane river, VI. 529.
 DANEGELT, a tax, VII. 646.
 Danes, character of the, VII. 749—Alfred's wars with, II. 480—their maritime expeditions, VII. 738—massacre of, VIII. 661—England conquered by, ib.; VII. 739—their invasions of England, VIII. 657 *et seq.*; of France, X. 4 *et seq.*; Ireland, XII. 466; Scotland, XIX. 745; and Britain, XX. 118—their settlement at Waterford, XXI. 768, 771—their north-west voyages, XVIII. 169. See Denmark.
 DANET (Peter), abbot, VII. 646.
 Danforth's throstle, VII. 444.
 Dangilla, genus of fishes, XII. 257.
 DANIEL the prophet, VII. 646—his vision, VII. 612.
 — (GABRIEL), French historian, VII. 647.
 — (JOHN FREDERICK), VII. 647—biographical notice of, I. 984, n.—his constant battery, ib.; XXI. 614, 615—on evaporation, IX. 408, 412, 414—his hygrometer, XII. 187—his pyrometer, XVIII. 703—on the thermometer, XXI. 222—his dissected battery, 613—on electro-magnetism, 639.
 — (Mr), his classification of dogs, XI. 763.
 — (SAMUEL), poet and historian, VII. 647.
 — on carp fishing, III. 160—on barbel fishing, 161.
 Danish succession, treaty of 1852, relating to, VII. 744.
 — balance, IV. 385—ballads, 397—colonies in Greenland, XI. 39—West India islands, XXI. 837.
 — language, VII. 750; XIII. 211—Bibles, IV. 702.
 — Royal Society, VII. 347.
 DANKALI, Abyssinian tribes, VII. 647; II. 121.
 DANNECKER (Johann Heinrich), sculptor, VII. 647.
 Dannemora, mine of, VI. 778; XX. 862.
 DANTE (Alighieri), VII. 647; XVII. 522—Boccaccio's commentary on, IV. 801, 802—Botticelli's illustrations of his *Inferno*, V. 240—poetry of, XVIII. 109—tomb, 812.
 DANTON (George-Jacques), French revolutionist, VII. 649; X. 86, 87.
 DANTZIC, VII. 652—corn trade of, 402—average prices and quality of its wheat, 402, 403—commerce of Denmark with, 739—siege of, in 1807, IX. 829—granaries at, X. 798—port of, XVIII. 670, 676—siege of, by Gustavus Adolphus, XX. 848—gulf of, XVIII. 766.
 DANUBE, river, VII. 652; IV. 312, 516; IX. 384; X. 582; XII. 10; XVII. 605, 646; XIX. 515; XXI. 377—navigation of, IX. 385; XVI. 63—mouths of the, IV. 742—operations on, between the Turks and Russians, XIX. 501.

DAP—DAS

- Dapedius, genus of fossil fishes, XII. 334; XVII. 126.
 DAPHNE, VII. 654.
 DAPHNEPHORIA, Boeotian festival, VII. 655.
 DAPHNIS, VII. 655.
 Daphnomelus, VII. 314.
 Daphnusa, siege of, VII. 318.
 DAPIFER, VII. 655.
 Dapsa, genus of insects, IX. 151.
 Daptrius, genus of birds, XVI. 741.
 DARABJIRD, Persian town, VII. 655.
 Dar-al-Baida, in Morocco, XV. 596.
 DARAPTI, in logic, VII. 655.
 D'ARBLAY (Madam), VII. 655. See Burney (Frances).
 Darby (Mr), his iron bridge, V. 363.
 — (Mr), on the valley of the Mississippi, XV. 279.
 D'Archiac (M.), on the flora of Britain, V. 231—on igneous rocks, XV. 138—on the cretaceous rocks of the basin of the Seine, 210.
 DARDANELLES, Straits of, VII. 655; IV. 740.
 DARDANUS, VII. 655—city, ib.
 Darent, river, XIII. 65.
 DARES, a Phrygian, VII. 655.
 DARFUR, in Central Africa, VII. 655; II. 229.
 DARIC, gold coin, VII. 656; II. 131; XVI. 359.
 DARIEN, Gulf of, VII. 656.
 — Isthmus of, VII. 656; XVII. 226—proposed canal across, II. 711.
 — Scottish colony of, VII. 656; V. 444; VIII. 392; XII. 818; XVII. 340.
 DARI, in logic, VII. 660.
 DARIUS, Persian kings of that name, VII. 660. See Persia.
 — Codomanus, XVII. 434—his defeat at Arbela, XIII. 768—pursued by Alexander, ib.—murdered by Bessus, ib.
 — Hystaspis, XVII. 434—his visit to Egypt, VIII. 465—limits of Persia, in the time of, XVII. 419.
 — Nothus, VIII. 466.
 DARJEELING, in Hindustan, VII. 660.
 DARLING, Australian river, VII. 660; IV. 256; XV. 697.
 — (Dr), on electro-biology, XX. 441.
 — Downs, IV. 282, 255.
 — (Grace), IX. 517.
 — (Sir Ralph), governor of New South Wales, IV. 273.
 DARLINGTON, in Durham, VII. 660—“Hell-Kettles” near, VIII. 267—and Stockton railway, I. 884.
 Darnes, his attempt on the life of Louis Philippe, X. 216.
 DARMSTADT, German city, VII. 660—roof of the Salle d'Exercice at, XIX. 393.
 Darnel-grass, V. 216.
 DARNETAL, French town, VII. 660.
 Darnis, genus of insects, IX. 170.
 Darnley jewel, XXI. 415.
 — (Lord), husband of Queen Mary, VIII. 391; XIX. 783—murder of, 785.
 DAROCA, Spanish town, VII. 660.
 Dart, river, VII. 763.
 DARTFORD, in Kent, VII. 660—population, XIII. 67.
 DARTMOUTH, in Devonshire, VII. 661—slates of, XV. 199.
 DARU (Comte de), historian, VII. 661.
 Darvill (Mr), on the race-horse, XI. 640.
 Darweeshees, VIII. 447.
 Darwin (Charles), on the geology of the Andes, II. 670—on cleavage in rocks, XV. 179—on foliation, 180—on coral reefs, 217, 218; XVII. 583; XVIII. 282; XXI. 1003—on the parrot-fish, XVI. 427—on volcanoes, XXI. 604, 605, 606; his theory of, 606—his account of the island St Thiago, 544.
 — (ERASMUS), VII. 661—Dr T. Brown's observations on his *Zoonomia*, I. 410; V. 683—on the earth-worm, XI. 301—on the destruction of the planetary system, I. 812.
 Dascillus, genus of insects, IX. 107.
 Dascyllus, genus of fishes, XII. 265.
 Dasmidæ, zoophytes, XXI. 1005.
 Dasycerus, genus of insects, IX. 142.

DAS—DAV

- Dasyopoda, genus of insects, IX. 198.
 Dasyopogon, genus of insects, IX. 234.
 Dasyprocta, genus of mammalia, XIV. 189.
 Dasypus, genus of mammalia, XIV. 191—teeth of, XVI. 440, 441.
 Dasytes, genus of insects, IX. 111.
 Dasyurus, genus of mammalia, XIV. 175—dental system of, XVI. 447.
 DATA, in mathematics, VII. 662.
 DATE, VII. 662. See Calendar, Chronology, Epoch, Era.
 — fruit of the palm, VII. 662; V. 213.
 — sugar, XX. 796.
 Date-plum tree, XVII. 764.
 Date-tree, V. 83, 213—in Africa, II. 216—in Fezzan, IX. 531.
 DATHAN, VII. 662.
 Datholite, mineral, XV. 94.
 Datisacaceæ, nat. order of plants, V. 205.
 DATISI, in logic, VII. 662.
 DATIVE, in grammar, VII. 662; X. 748.
 Datnia, genus of fishes, XII. 277.
 Datnioides, genus of fishes, XII. 277.
 Datura stramonium, V. 202; XVII. 702—its poisonous properties, XIV. 438.
 DAUBENTON (Louis Jean Marie), VII. 662.
 Daubeny (Dr), his geological account of *Ætna*, II. 192, 193—on the origin of volcanic action, XV. 192; XXI. 606.
 Dauber, in engraving, VIII. 803.
 Daubisson on hydraulics, XII. 112, 113, 121 *et seq.*
 Daudin on birds, XVI. 729—on reptiles, XIX. 33 *et seq.*
 DAUGHTER, VII. 663.
 DAULIS, ancient town of Phocis, VII. 663.
 Daun (General), XVIII. 653, 654.
 Daunau (M.), on the origin of printing, IV. 706.
 Daune (William), ancient Scottish music published by, XX. 314.
 DAUPHIN, VII. 663—Latin classics for the use of. See Delphin.
 DAUPHINÉ, in France, VII. 663; X. 277.
 DAURAT (Jean), French poet, VII. 663.
 Daura, province of Houssa, XI. 776.
 DAVENANT (John), English prelate, VII. 664.
 — (Dr Charles), VII. 664—on human mortality, XV. 601—on political economy, XVIII. 218.
 — (Sir William), poet, VII. 664; XV. 29; XVIII. 122; XXI. 170, 171—opera by, VIII. 161.
 DAVENTRY, in Northamptonshire, VII. 664; XVI. 297.
 DAVID, the Psalmist, VII. 664; XII. 767—Dr Chandler's Life of, VI. 413—psalms of, XII. 188; XVIII. 97, 679.
 — (JACQUES-LOUIS), founder of the modern French school of painting, VII. 665; XVII. 76.
 — I., king of Scotland, XIX. 751.
 — II., king of Scotland, XIX. 756.
 DAVIDISTS, heretics, VII. 666.
 Davidowich (General), XV. 788.
 DAVID'S (St), city in Pembrokeshire, VII. 665; XVII. 374.
 Davidson (Dr), on the Pentateuch and canon, IV. 695, 697 *et seq.*
 — on the brachiopoda, XV. 336, 337, 338.
 — printer, XVIII. 538.
 Davidsonia, fossil mollusks, XVII. 104.
 Davies (Griffith), his tables of life-contingencies, III. 223; XII. 401, 403.
 — (John), his fire-escape, XIII. 438.
 — (Sir John), VII. 666.
 DAVILA (Arrigo Caterino), historian, VII. 666.
 Davine, mineral, XV. 73.
 Davis, buccaneer; Easter island supposed to have been discovered by, XVIII. 281.
 — (Capt.), VII. 642.
 — (John), navigator, VII. 666; X. 473; XI. 39; XVIII. 167—his quadrant, IV. 351.
 — (Mr), his translations from the Chinese, VI. 577, 580.
 — (Sir John), XII. 480—quotation from his poem on the immortality of the soul, I. 233.

DAV—DEA

- DAVIS'S STRAITS, VII. 666; XVIII. 167, 168.
 Davison, his mode of seasoning timber, XX. 169, 170.
 DAVITS, VII. 666.
 Davoust (Marshal), X. 137, 139, 143—his occupation of Hamburg, XI. 199.
 DAVY (Sir Humphry), VII. 667—his early history and remarkable genius, I. 966—his first papers and experiments on nitrous oxide, 967—his removal to the Royal Institution, *ib.*—experiments on voltaic electricity, *ib.*—his Bakerian Lectures, 968—testimonies to his scientific character, *ib.*, 969—his researches on chlorine and iodine, *ib.*—his extensive popularity, *ib.*—researches on flame, *ib.*—his modification of Lavoisier's theory of combustion, 971—his protectors for ships, *ib.*—as president of the Royal Society, *ib.*—death and philosophical character, *ib.*—practical nature of his inventions, 972—his connection with Faraday, 977—his opinion of Cavendish, 929—his reception of the atomic theory, 938—on alchemy, II. 452—his lectures on agriculture, 373—on gypsum as a manure, 415—on the composition of the atmosphere, IV. 180—his connection with Dr Beddoes, 566—his oxyhydrogen blowpipe, 794—his suggestion of an anæsthetic agent, VI. 631—on electrical light, VIII. 547—on electro-magnetism, 532—on falling stars, IX. 479—on salmon fisheries, 609—his Salmonia, III. 164—on Benjamin Franklin, X. 294, *n.* 2—his safety-lamp, I. 969; VII. 124, 671—his account of the papyrus at Herculaneum, XI. 345, 346—on the influence of a vacuum on the electric spark, VIII. 545—his theory of electrical light, 547—on the pyro-electricity of tourmaline, 559—on the torpedo, 574—his theory of irrigation, XII. 622—on the combustion of fuel, X. 353; of gas, 424—on voltaic currents, producing calorific and luminous effects, XXI. 626—on the conducting power of metals, 622—on the chemical effects of voltaic electricity, 628.
 — (Dr John), on the torpedo, VIII. 574—on the salmonidæ, XII. 225, 238, 239, 330—on the Ionian islands, 445 *et seq.*—on the temperature at which fishes can live, 330.
 DAVY'S SOUND, XI. 41.
 DAWES (Richard), VII. 673.
 — (Mr), his eye-piece for examining the sun's disk, IV. 87—on the faculæ of the sun, 88—on the ring of Saturn, 92—his catalogue of double stars, 95—his method of observing the magnitude of telescopic stars, 96.
 DAWLISH, in Devonshire, VII. 673.
 Dawson (J. F.), his work on British beetles, IX. 24.
 — (William), drilled turnips on his farm in 1764, II. 263—on the effects of lime and dung, 303.
 DAX, in France, VII. 673.
 DAY, VII. 673; VI. 75—English names of the days, 75; I. 458, *n.* 2—sidereal, IV. 23—civil, *ib.*—astronomical or solar, *ib.*—causes of variations in length of, 23—days of grace, IX. 443, 446; X. 741—Egyptian, VIII. 450—pagan deities from which named, I. 458, *n.* 2—table for ascertaining the number of days from any one day to any other day, XII. 433.
 — (John), printer, XVIII. 538.
 Day's parautoptic lock, XIII. 543.
 Dayman (Lieut. Joseph), on deep-sea soundings in the Atlantic, XX. 26.
 DAYTON, city in the state of Ohio, VII. 673; XVI. 490.
 DAZE, any glittering mineral, VII. 673.
 DEACON, VII. 673; VIII. 743; IX. 280.
 DEACONESS, VII. 673; VI. 641.
 Dead, respect for in China, VI. 571. See Death.
 Dead-letter office, XVIII. 408—returned or "dead letters," 418.

DEA—DEC

- Dead-escapement, VII. 8; XVII. 385.
 DEAD-LIGHTS, VII. 673—reckoning, *ib.*; XVI. 25.
 Dead-nettle, order of plants, V. 202.
 — white, plant, V. 117, 124.
 Dead-point, in mechanics, XIV. 398, 399.
 DEAD-SEA, VII. 673; III. 760; XII. 735; XV. 145; XVII. 187, 189—its depression below the sea-level, 591—specific gravity of its waters, *ib.*; XII. 89. See Asphal-tites.
 Deadly nightshade, XIV. 438.
 DEAF AND DUMB, VII. 674—J. C. Amman's mode of teaching the, II. 717—mode in which the blind communicate with, IV. 778—Condillac on their ideas, VII. 234—Dalgarno on the education of, 626—rights of the, XIV. 426—hearing-trumpet, XXI. 361—list of works on, VII. 688.
 Deafness, cases of, cured by glycerine, X. 685.
 DEAL, fir-plank, VII. 689—Norwegian deals, XVI. 328—measurement of deals, XXI. 280.
 — town in Kent, VII. 689—population, XIII. 67.
 Deal-fish, XII. 303.
 DEAN, VII. 689; VIII. 743—rural dean, VII. 689—deans in peculiar, *ib.*—dean and chapter, *ib.*; VI. 417—of the Chapel-royal, VII. 689; VI. 416—of a monastery, VII. 689—of Guild, *ib.*; XI. 87—of the Faculty of Advocates, VII. 689; II. 158—in universities, XXI. 446, *et seq.*
 — Bridge, Edinburgh, VIII. 394.
 — Forest of, VII. 689; X. 680, 681—coal-field in, XV. 203.
 Deane (Sir Anthony), his improvements on ships, XVI. 93, 96; XX. 130.
 Deaneries, VIII. 743.
 Dearg (Lough), XII. 505.
 Death, XVII. 702—signs of, from drowning, VIII. 181—from laughter, 192, *n.* 1—cases of apparent, XIV. 429—signs of, *ib.*—medico-legal examination of a dead body, *ib.*—death from starvation, *ib.*; from extremes of temperature, 431; wounds, *ib.*; poisons, 432—by asphyxia, 430; XVII. 703—by syncope, 702—by coma, *ib.*—in the sense in which it was incurred by Adam, XXI. 201.
 — black, pestilence in Greenland, XI. 39.
 Death's head moth, IX. 210—an enemy to bees, IV. 585.
 DEATH-WATCH, or Death-tick, VII. 689; IX. 112.
 Deaths, in England, in 1852, VIII. 756—annual, per cent., XV. 649—in Ireland, from 1841 to 1851, XII. 510—ratio of, in different countries and cities, XV. 650—dependence of births and marriages on the, XVIII. 348—registration of, 831—Scotland, XIX. 800—Switzerland, XX. 890.
 DEBATEABLE LAND, VII. 689, 578.
 DEBENTURE, VII. 689—book, in book-keeping, V. 23.
 DEBRECZYN, Hungarian city, VII. 689.
 DEBRUIZED, in heraldry, VII. 689.
 Debt, imprisonment for, XII. 365–66; XVIII. 574.
 — NATIONAL, VII. 689; VIII. 751—funded and unfunded debt of the United Kingdom in 1854, 752—amount in each year since 1820, X. 342—managed by the Bank of England, XV. 473—Sir R. Walpole's plan for lessening it, V. 456—Pitt's plan of a sinking fund, 518; VIII. 753—of Ireland, XII. 526—Dr Hamilton on, XI. 201—debt of different European States, IX. 398—of Spain, XX. 492—of the United States, XXI. 428.
 — Commissioners, payment of savings-banks to, XIX. 657; accounts and returns of, to, 669.
 Debtors, Roman law against, VI. 740; XIX. 301—inhibition of, XII. 381.
 DECADE, VII. 689.
 DECAGON, in geometry, VII. 689.

DEC—DEC

- DECALITRE, VII. 689; X. 284.
 DECALOGUE, VII. 689—the ten commandments not binding on Christians as commandments, I. 469; but as they are in themselves moral duties, *ib.*
 DECANDOLLE, VII. 689. See Candolle, De.
 DECANTATION, VII. 689.
 DECANUS, VII. 689.
 Decapoda, crustacea, VII. 540.
 — tribe of mollusks, XV. 398, 395, 397.
 DECAPOLIS, VII. 689.
 DECAPROTI, VII. 689.
 DECASTYLE, in architecture, VII. 689; III. 508.
 Decay, of building stones, XX. 712.
 Decazes, X. 179, 180 *et seq.*
 DECCAN, in Hindustan, VII. 689; XI. 446, 449.
 Decebalus, VII. 615; XIX. 341.
 DECEMBER, VII. 690; VI. 77—gardening calendar for, XI. 761.
 DECEMPEDA, ancient measure, VII. 690.
 DECEMVIRI, Roman magistrates, VII. 690; XIX. 300.
 Decency, as an incentive to virtue, XV. 564.
 DECENNALIA, Roman festival, VII. 691.
 Decentius, VII. 303.
 DECHALES (C. F. Millet), VII. 691.
 Dechenite, mineral, XV. 106.
 DECIDUOUS, VII. 691, 698; V. 110.
 DECIL, in astronomy, VII. 691.
 DECIMAL ARITHMETIC, VII. 691—introduction of, I. 551—fractions, III. 599; terminate, 600; approximate, 601; interminate, 602.
 — COINAGE, VII. 691; XV. 430.
 DECIMALS, circulating, VII. 691.
 DECIMATION, VII. 691.
 Decipherer, or letter-opener's, department in the post-office, XVIII. 410.
 DECIPHERING, VII. 691; VI. 728.
 Decisions, in law, XIII. 257.
 DECIUS, Roman emperor, VII. 691; XIX. 348.
 — MUS, Roman consul, VII. 691; XIX. 304.
 DECK of a ship, VII. 691; XX. 189—flush-deck, VII. 691—half deck, *ib.*—sheer of, XX. 180.
 Decker (John), his work on anonymous books, IV. 711.
 — (Sir Mathew), on high duties, XXI. 71.
 — (Von), on war, XXI. 697.
 DECLAMATION, VII. 691—dramatic, XXI. 172.
 DECLARATOR, in Scots law, VII. 692; XIX. 811.
 Declension, in grammar, VII. 692. See Inflection.
 DECLINATION, VII. 692—in astronomy, *ib.*; IV. 2—table of the sun's, for every day of the year, 797—sun's, in nautical astronomy, XVI. 36—moon's, 37—of the compass, VII. 692; I. 990—of a plane or wall, in dialling, VII. 692, 783, 787.
 DECLINATOR, instrument used in dialling, VII. 692.
 DECOCTION, VII. 692.
 Decoits, Indian robbers, XI. 520, 521.
 DECOLLATION, VII. 692.
 Decomposable and indecomposable bodies, XXI. 629.
 DECOMPOSITION, in chemistry, VII. 692—influence of electricity in, VIII. 593—modes of preserving articles of food from, IX. 766—of pressures, in statics, XX. 542—of building stone, 712—electro-chemical, XXI. 632—of water, by voltaic electricity, 628.
 DECORATION, in architecture, VII. 692; V. 757—of the Athenian buildings, IV. 167.
 DÉCOUPLÉ, in heraldry, VII. 692.
 Decoy, XX. 210, *n.*
 DECREMENT, VII. 692—laws of, in crystallization, 553, 554, 555.
 DECREPITATION, VII. 692.
 Decrepitude, XIV. 425.

DEC—DEG

DECRETAL, VII. 692; VI. 189; XXI. 449.
 DECUMATES AGRI, VII. 692.
 DECUPLE, VII. 692.
 DECURIA, VII. 692.
 DECURIO, Roman officer, VII. 692; III. 631.
 DECUSSION, in geometry, &c., VII. 692.
 DEDICATION, VII. 692.
 DEDITICI, VII. 692; XIX. 307.
 DEE, river in Cheshire, VII. 692, 735; VI. 529—tidal bore on, XVI. 65—land reclaimed from, 83.
 — river in Kirkcudbrightshire, XIII. 98; XIX. 790.
 — river in Scotland, VII. 692; XIX. 794—experiments at, XVI. 81.
 — (JOHN), mathematician, VII. 693—on optical instruments, XVI. 525.
 DEEDS, falsification of, XIV. 427—registration of, XVIII. 842.
 DEEG, in Hindustan, VII. 693—battle of, XI. 505.
 DEEMSTERS, judges in the Isle of Man, and in Jersey, VII. 693—courts of, XIV. 245.
 DEER, VII. 693; XIV. 205—as food, IX. 762—dentition of, XVI. 466, 467—fossil, XVII. 170, 171—of Hindustan, XI. 455—deer-hunting, XII. 39, 40—of Java, 704—number of species, XVII. 632—deer-stalking, XX. 212. See Rein-deer.
 DEFAMATION, VII. 693.
 DEFAULT, in law, VII. 693.
 DEFECTION, VII. 693.
 DEFEND, VII. 693.
 DEFENDER of the Faith, VII. 694; VIII. 700.
 DEFENDERS, VII. 694.
 DEFERENS, in astronomy, VII. 694.
 Deffand (Madame du), on the origin of our knowledge, I. 72—her remark on Gibbon, X. 611, n. 1.
 Deflaid, in fortification, IX. 800.
 DEFINITION, in logic, VII. 694; XIII. 595—as analysed by German logicians, 595, n. 2—as making concepts distinct, ib.—hypothetical growth of, 596—different steps of, 597—division compared with, 598—the uses of predicables in, 599—logical foundation of, 600—rules for, ib., n.—known before Socrates, XX. 398; his fondness for, 399.
 DEFINITIVE, VII. 694—definitives, in grammar, X. 749, 791.
 DEFLAGRATION, in chemistry, VII. 694.
 Deflagrator, XXI. 626.
 Deflecting forces, in dynamics, VIII. 356.
 DEFLECTION of the rays of light, VII. 694—of beams, XX. 763.
 Defloration, signs of, XIV. 428.
 DEFOE (Daniel), VII. 694—his Review, XVI. 183—on the fate of an impartial writer, 186, n.—his novels, XIX. 270—Robinson Crusoe said to be founded on the adventures of Alexander Selkirk, XX. 40; XIII. 13—woollen manufactures of Halifax mentioned by, XXI. 916.
 DEFOLIATION, VII. 698; V. 109—period of, in different places, 221.
 Defontaine (Mons.), on the velocity of the Rhine, XII. 144.
 DEFORMITY, VII. 698.
 Defrancia, fossil animals, XVII. 98.
 Defries's gas-meter, X. 423.
 DEGENERATION, VII. 698.
 DEGERANDO (Marie Joseph), VII. 699—on the Kantian schools of philosophy, I. 200—his account of Gassendi, X. 434, 435 *et seq.*
 Deglutition, XVII. 659—of fishes, XII. 221—in serpents, XIX. 47.
 Dego, X. 100.
 DEGRADATION, VII. 699—of a knight, VI. 623.
 Degradation, in the university of Cambridge, XXI. 465.
 DEGREE, VII. 700—of latitude and longitude, XIII. 685; X. 480.
 — in civil and canon law—in music, VII. 700.
 — academical, VII. 700; XXI. 447, 450, 458, 463, 472, 484, 490.

DEG—DEL

Degree, measurement of, on the earth's surface, VII. 700, 702; IX. 548 *et seq.*; I. 772, 836, 837, 853, 854.
 DEHISCENT, in botany, VII. 700; V. 135.
 Dehwars, IV. 642.
 DEIFICATION, VII. 700; III. 307.
 DEINOCRATES, Macedonian architect, VII. 700.
 DEIODES, founder of the Median empire, VII. 700.
 Deinornis, bird, XVII. 634. See Dinornis.
 Deinotherium. See Dinotherium.
 DEIOTARUS, VII. 700.
 DEIPNOSOPHISTS, VII. 700; IV. 159; II. 476.
 Delirodon, genus of serpents, teeth of, XVI. 431.
 DEISCAL, ancient ceremony, VII. 700.
 DEISM, VII. 701.
 DEIST, VII. 701.
 DEITY, VII. 701. See God.
 DEJANIRA, wife of Hercules, VII. 701.
 Dejean (Le Comte), his works on coleoptera, IX. 18.
 Dejoces, XIV. 421; XVII. 434.
 Dekrungh, river, III. 764.
 Delacroix, French painter, III. 719.
 DELAGOA BAY, in Africa, VII. 701.
 Delahire's pump, XII. 177.
 DELAMBRE (J. Baptiste Joseph), VII. 701—sketch of his life and scientific character, I. 774, n. 1, 833, 836, 838—his measurement of a degree of latitude, 774, 836; and of the arc of the meridian of Paris, IX. 551—prize awarded to, I. 837—on the astronomical merits of Ptolemy, III. 793; of Dominic Cassini, 803; and of Lalande, 806—on Lagrange, XIII. 157—his astronomical labours, III. 807—on the solar spots, IV. 28—on dials, VII. 773 *et seq.*—on the orbit of comets, 168—his table of the stations and retrogradations of the planets, IV. 57—his analysis of Ptolemy's work on optics, XVI. 521.
 Delamere, lake and forest, VI. 529.
 Delarive (Prof.), on electricity, VIII. 542, 580, n. 1, 552, n.—on the electricity of the solar rays, 570—on caustic curves, XVI. 577, 578—his experiments in voltaic electricity, XXI. 623, 626, 631, 640—on the chemical effects of voltaic electricity, 628; therapeutic effects of, 635; law of the propagation of, 623, 624—voltaic gilding and silver plating due to, 637.
 De la Rue. (See Rue, Warren de la.)
 Delaporte (T. L. de Castelnau), his entomological works, IX. 18.
 Delaroche, French painter, III. 719; XVII. 85.
 — on heat, XI. 266, 273; I. 954—his formula of the relation between the pressure and temperature of steam, XX. 565.
 Delarue (M.), his reflecting telescopes, XXI. 128. See Rue (Warren de la.)
 Delasone, his anatomical researches, II. 764—on cartilage, 831.
 Delator's hive, III. 295.
 Delaval on electricity, VIII. 529.
 Delavigne, poetry of, XVIII. 117.
 DELAWARE, state, VII. 703; XXI. 419—colonization of, 433—wine of, 888.
 — river and bay, VII. 704; XVI. 175; XVII. 395, 509, 510, 646—bridge over the river, I. 876.
 — Indians, II. 680.
 Delesse (M.), on igneous rocks, XV. 138.
 Delessite, mineral, XV. 78.
 DELETERIOUS, VII. 704.
 Deleuze (M.), his work on animal magnetism, XX. 416, 425 *et seq.*
 DELFICO (Melchior), VII. 704.
 DELFT, VII. 705—ware, ib.; XVIII. 443.
 Delgado, Cape, XV. 669.
 DELHI, in Hindustan, VII. 706; XVI. 301; XI. 463, 479, 481—siege of in 1804, by Holkar, 505—city sacked by Nadir Shah, XI. 480—outbreak of the Sepoy mutiny at, XVI. 303—siege and capture of, 304, 305—king of, 305.

DEL—DEM

DELIA, ancient festival, VII. 707.
 — surname of Diana, VII. 707.
 DELIACAL PROBLEM, VII. 707.
 DELILLE (Jacques), poet, VII. 707.
 — (J.), blind author, IV. 778.
 DELIQUESCENCE, VII. 708.
 DELIQUUM, in chemistry, VII. 708.
 DELIRIUM, VII. 708—tremens, XIV. 530.
 — See Mental Diseases.
 Delisle, his astronomical labours, III. 806—his thermometer, IV. 457.
 Delitzsch (F.), XVII. 533.
 Delium, battle of, XX. 375.
 Dellagana (Messrs), their method of stereotyping, XVIII. 551.
 DELLAMCOTTA, fortress in Hindustan, VII. 708.
 DELOS, island, VII. 708—amphictyony of, II. 729.
 Delphax, genus of insects, IX. 169.
 DELPHI, VII. 709—amphictyony of, II. 727—oracle of, XVI. 698.
 DELPHIN edition of the classics, VII. 710; IV. 711; XI. 794.
 Delphinapterus, genus of mammalia, XIV. 229.
 DELPHINIA, ancient feasts, VII. 710.
 Delphinia, in zoology, XIV. 220.
 Delphinium, genus of plants, V. 180.
 Delphinorhynchus, genus of mammalia, XIV. 221.
 DELPHINUS, a constellation, VII. 710; IV. 80.
 — genus of mammalia, XIV. 222. See Dolphin.
 DELPHOS, Greek village, VII. 710.
 DELTA of Egypt, VII. 710; VIII. 421—towns in, 497.
 — of the Danube, VII. 654—of the Mississippi, XV. 279; XVI. 86—Indus, XX. 304—formation of deltas, XVI. 86; XVII. 586; XV. 140, 141.
 — steam-vessel, XX. 164, 668.
 DELTOID, VII. 710—muscle, III. 38—leaf, V. 91.
 Deltoides, section of insects, IX. 216.
 Deluc. See Luc (De).
 DELUGE, VII. 710—dates of deluges, VI. 677—Hindu traditions respecting the, XV. 761. See Antediluvians, Deucalion, Noah.
 Delundung, in zoology, XIV. 166.
 Delvauxine, mineral, XV. 101.
 Delves (Joseph), his microscopic photographs, XIV. 801.
 DELVINO, Turkish village, VII. 724.
 DEMADES, Athenian orator, VII. 724.
 DEMBEA, lake of Abyssinia, VII. 724; II. 55, 215.
 Demembration, crime of, XIV. 428.
 DEMENTIA, VII. 724; XIV. 529, 534, 426.
 DEMERARA, VII. 724; XI. 81.
 — river, XI. 81.
 DEMESNE, or demain, VII. 724.
 DEMETER, name of Ceres, VII. 724; VI. 387; I. 457—mysteries of, XV. 753.
 DEMETRIA, ancient festival, VII. 724.
 Demetrius, genus of insects, IX. 82.
 DEMETRIUS POLIORCETES, VII. 724; IV. 172; XIII. 775.
 — king of Antioch, III. 273.
 — I. Soter, VII. 724.
 — II. Nicator, VII. 724.
 — Phalereus, VII. 724; IV. 172; XVII. 518; XIX. 839.
 — a cynic philosopher, VII. 725.
 — of Skepsis, on the site of Troy, XXI. 356, 358.
 DEMI, VII. 725—George, in fortification, 725—Quaver—Semiquaver, ib.
 DEMI ATTICI, VII. 725; IV. 193.
 Demidoff mines of platina, XV. 236.
 DEMIGODS, VII. 725—reign of the demi-gods in Egypt, XV. 765.
 Demilune, in fortification, IX. 818.
 DEMISE, VII. 725.
 DEMIURGE, VII. 725; X. 687, 688, 689; XIV. 299.
 DEMIURGUS, chief magistrate in ancient Greece, VII. 725.
 DEMMIN, town of Prussia, VII. 725.
 DEMOCRACY, VII. 725; X. 733, 735—Aristotle on, III. 568—at Athens, IV. 193,

DEM—DEN

207, 212—Plato's views of, XVII. 810, 811—Tocqueville on that of America, XXI. 299.
 DEMOCRITUS, VII. 725; X. 498—on the moon's spots, I. 568—his atomic theory, III. 308—said to have put out his eyes, IV. 779—works on his doctrines, VII. 726—his knowledge of medicine, XX. 810.
 DEMOGORGON, VII. 726.
 DEMOIVRE (Abraham), VII. 726—on the calculus of signs, II. 556, 561—on life assurance, XII. 397—on annuities, III. 220; XV. 600—on equations, IX. 299, 306—on probability, XVIII. 589.
 DEMON, VII. 726. See Dæmon.
 Demonology, III. 310 *et seq.*—Sir Walter Scott's work on, XIX. 823.
 Demonomania, XIV. 538.
 DEMONSTRATION, in logic, VII. 726—Aristotle on, III. 554—evidence of, IX. 416.
 Demonstrative metaphysics, XIV. 603.
 DEMONTE, Italian town, VII. 726.
 De Morgan (Mr). See Morgan (Mr De).
 DEMOSTHENES, orator, VII. 726—his exertions against Philip, XIII. 765—oration of Hyperides against, XII. 192.
 — lantern of, III. 442, 462; IV. 164.
 — Athenian commander, IV. 206.
 DEMOTIC characters, VII. 729; XI. 372—system of writing, 369, 371, 429; VIII. 441—Dr Brugsch on, XI. 371, n. 7, 377, n. 3, 430, 409, 431. See Enchorial.
 DEMOTICA, Turkish town, VII. 729.
 DEMPSTER (Thomas), VII. 729—on Etruria, IX. 356, 361, 371.
 — OF COURT, VII. 734.
 DEMSTER, or deemster, VII. 734, 693.
 DEMULCENTS, in medicine, VII. 734.
 DEMURRAGE, in commerce, VII. 734.
 DEMURRER, in law, VII. 734; VIII. 789.
 DEMY, VII. 734; XXI. 456.
 DENAIN, French village, VII. 734.
 DENARIUS, Roman coin, VII. 734, 67; XV. 432; XVI. 383.
 Denary numerals, history of, III. 579; I. 703.
 DENBIGH, in Wales, VII. 734, 736.
 DENBIGHSHIRE, VII. 735—grits of, XV. 197—sandstones and flags, 198—population and value of property, VIII. 754.
 DENDERAH, in Egypt, VII. 736; VIII. 505—temple of, ib.; to whom dedicated, XI. 384 and n. 11.
 DENDERMONDE, town in Belgium, VII. 736.
 Dendoor, remains of the temple of, XVI. 349.
 Dendraspis, genus of reptiles, XIX. 64.
 Dendrerpeton, fossil reptiles, XVII. 136.
 Dendrites, formation of, VII. 550.
 DENDRITIC, VII. 736.
 Dendrocolaptes, genus of birds, XVI. 768.
 Dendrodonts, fossil fishes, odontology of, XVI. 413, 428.
 Dendrodus, genus of fossil fishes, XII. 337; XVII. 124—tooth of, XVI. 413.
 Dendroides, genus of insects, IX. 133.
 DENDROMETER, VII. 736.
 Dendrophagus, genus of insects, IX. 143.
 Dendrophis, genus of serpents, XIX. 57.
 DENDROPHORIA, religious ceremony, VII. 736.
 Dendropupa, fossil mollusks, XVII. 111.
 DENE, Arabian town, VII. 736.
 DENHAM (Sir John), VII. 736; XXI. 935—character of his poetry, XVIII. 122.
 — (Major), VI. 752—on Fezzan, IX. 528—his visit to Mandara, XIV. 261—his discoveries in Africa, II. 210; X. 477—his notices of Bornou, V. 50, 51, 53.
 Denholm Hill quarry, fossils of, XIX. 453.
 DENIER, coin, VII. 737; XVI. 386.
 DENINA (C. Giovanni Maria), VII. 737.
 Denis (P. S.), his analysis of the serum of blood, II. 781.
 — on the Zaluski library, XIII. 426, n. 2.
 — (St), French town, VII. 738.
 — (Mons.), his classification of books, IV. 715—his introduction to bibliography, 716.
 — (Madame), and Voltaire, XXI. 661.
 K

DEN—DEO

- Denison (E. B.), on clocks and watches, VII. 2, 11 *et seq.*—his clock escapement, 11—his gravity escapement, 14—his lock, XIII. 542—on locks, 535 *et seq.*—his spring remontoire, VII. 21—his sundial, VIII. 37.
- Denison (Sir William), governor of Tasmania, XXI. 32.
- DENIZEN, in law, VII. 738.
- DENMAN (Thomas, Lord), VII. 738.
- DENMARK, VII. 738; IX. 402—Royal Academy of Sciences, II. 66; VII. 347—colonies, II. 708; VII. 149; XI. 39—army of, III. 650—British operations against, in 1801, V. 500, 501; XVI. 136, 137—seizure of fleet by the British, in 1807, V. 602, 605; X. 148—united with Norway and Sweden under one sovereign, XVI. 317—separation of Norway from, V. 614, 615; XVI. 318—corn imported into Britain from, VII. 399, 400—Jews in, XII. 783—libraries of, XIII. 426—coins of, XV. 441, 443; XVI. 389—colonies in Greenland, XI. 39—connection with Iceland, XII. 197—monarchy of, XV. 413—newspapers of, XVI. 202—postal system, XVIII. 424—Insurance Society of, XII. 413—proportion of insane, XIV. 536—the Reformation in, XVIII. 827—modern literature of, XIX. 691—navy, XX. 138—wars with Sweden, 845 *et seq.*; V. 530—weights and measures, XXI. 810—map of, VII. Plate. See Danes, Danish.
- Dennet's rocket apparatus, XIII. 445.
- DENNIS, or Dionysius, the Little. See Dionysius the Little.
- (George), his work on Etruria, IX. 361.
- (John), critic, VII. 751—on Addison's Cato, VIII. 151.
- Denny (Henry), his works on insects, IX. 21.
- Dennys (John), his work on angling, III. 162.
- DENOMINATOR, VII. 751; III. 597; II. 492.
- Denon, on Cleopatra's Needles, II. 472—on the ruins of Thebes, III. 435; and the Egyptian pyramids, 436.
- DENSITY, VII. 751—of the earth, I. 834—Cavendish's experiments on, *ib.*; VI. 353—of the atmosphere, IV. 178; XVIII. 27, 52—instrument for measuring, III. 390—of metals, VI. 482—of saturated steam, XX. 568, 571.
- Dent, in Yorkshire, XXI. 956, 958.
- (Mr.), on clocks and watches, VII. 7 *et seq.*—his mercurial pendulum, *ib.*—his Royal Exchange clock, 19—his Great Exhibition clock, *ib.*—his spring remontoire, 21—electrical dial, 26—his self-acting electrical clock, 27—compensation balance, 31—prismatic balance, *ib.*—his improvements on the dipteroscope, VIII. 37.
- DENTAL, VII. 751.
- tubes, XVII. 653.
- Dentalina, fossil shells, XVII. 94.
- Dentalium, genus of annelides, XI. 296.
- genus of mollusks, XV. 378.
- DENTATUS (Curius), VII. 751; XIX. 306.
- Dentex, genus of fishes, XII. 287—fossil, 343.
- Denticura, section of insects, IX. 103.
- DENTIFRICE, VII. 751.
- DENTILS, VII. 751; III. 509.
- Dentine, XVI. 407, 410.
- Dentirostres, tribe of birds, XVI. 747.
- Dentists, XIV. 464—ivory used by, XII. 664.
- DENTITION, VII. 751—in man, III. 26—in the lower animals, 105, 106. See Odontology, Teeth.
- D'ENTRECASTEAUX's Channel, VII. 751; IV. 261.
- discoveries in Australasia, IV. 253, 258, 264.
- Denudation, in geology, XV. 181.
- DENUNCIATION, VII. 751.
- DEOBSTRUENTS, in pharmacy, VII. 751.
- DEODAND, VII. 751.
- Deodar Cedar, V. 209; XVII. 760—as timber, XXI. 278.

DEO—DER

- DEODHUR, town in Hindustan, VII. 752.
- Deodorizers, XIX. 621.
- Deodunga, highest known peak of the Himalayas, XVII. 598, 643.
- Deohá, river in Oude, XVII. 15.
- DEONELLA, in Hindustan, VII. 752.
- Deontology, XV. 536 and *n.* 2; I. 300—medical, XIV. 464—Bentham's work on, I. 300, 303.
- Deparcieux (M.), on probabilities of life, III. 221; XII. 398—his aræometer, III. 391—on overshot-wheels, XII. 168—on mortality, XV. 601, 632.
- Dependence, feeling of, XIV. 620.
- DEPHLEGATION, VII. 752.
- DEPHLOGISTICATED, VII. 752.
- air, VII. 752. See Oxygen gas.
- Depilation, XIII. 306.
- DEPILATORY, VII. 752.
- Depolarization of light, I. 908, 909; XVI. 648—of heat, I. 957; XI. 267.
- DEPONENT, in grammar and in law, VII. 752.
- DEPOSITION, VII. 752.
- Deposits, bank of, XV. 450—interest on, 451; none allowed by the Bank of England, 473—dangers incident to the system, 451—in Scotch banks, 484.
- Depressa, section of insects, IX. 104.
- DEPRESSION of the Pole, VII. 752—of a star—of the visible horizon, *ib.*
- DEPRIVATION, in law, VII. 752. See Degradation.
- DEPTFORD, in Kent, VII. 752; XIII. 67—dock and victualling yards of, VIII. 80.
- DEPURATION, VII. 752.
- DEPUTATION, VII. 753.
- DEPUTY, VII. 753—French Chamber of Deputies, X. 278.
- DERA GHAZEE KHAN, in Afghanistan, VII. 753.
- ISMAIL KHAN, in Afghanistan, VII. 753.
- Derangement, Mental. See Mental Diseases.
- Derayeh, III. 343, 344—captured by the Turks, 366—destroyed by Ibraheem Pasha, VIII. 494.
- Derbe, genus of insects, IX. 169.
- DERBEND, or Derbent, Russian town, VII. 753—province, XIX. 551, 521.
- DERBY, VII. 753—porcelain factory at, XVIII. 437.
- (Earl of), king of Man, XIV. 248.
- (Lord), prime minister, V. 672.
- DERBYSHIRE, VII. 753—population and value of property, VIII. 754—lace manufacture in, XIII. 145—caverns in, XI. 71—its bricks, V. 346—upper carboniferous rocks of, XV. 203—lead mines of, 245; yield of, in 1854, 246.
- DERCETIS, Syrian goddess, VII. 756; IV. 157.
- genus of fossil fishes, XII. 338.
- DEREHAM, EAST, in Norfolk, VII. 756; XVI. 289.
- DERELICTS, in civil law, VII. 756.
- Derevaragh (Lough), XXI. 838—a kind of fish found in, 840.
- DERG (Lough), VII. 756; VIII. 104; XII. 505; VI. 753; XX. 92.
- DERHAM (William), D.D., VII. 756—Lord Woodhouselee's edition of his Physico-theology, XXI. 412.
- DERIVATIVE, in grammar, VII. 756.
- Dermatin, mineral, XV. 84.
- Dermestes, genus of insects, IX. 115; XXI. 549.
- Dermestini, tribe of insects, IX. 115.
- Dermopteri, or dermopterous fishes, XII. 227.
- Dermot, king of Leinster, XII. 467.
- Deroot-esh-Shereef, VIII. 505.
- Derr, temple of, XVI. 349.
- Derraiyeh, III. 343. See Derayeh.
- Derrick's table of the dimensions for building ships, XX. 132.
- Derry. See Londonderry.
- DERVIS, or Dervish, VII. 757; XV. 304. See Fakir.
- DERWENT, river, Cumberland, VII. 757, 576.
- Derbyshire, VII. 754.

DER—DES

- Derwent, Yorkshire, XXI. 957.
- DERWENTWATER, VII. 757; 578.
- Earl of, his rebellion, V. 454—his execution, 455.
- DESAGULIERS (Jean Theophile), D.D., VII. 757—his contributions to electricity, I. 733—his theory of evaporation, IX. 407—his account of Newcomen, Cawley, and Beighton's improvements on the steam-engine, XX. 575—steam-boiler figured by, 586.
- Desains on the polarization of heat, XVI. 683.
- DESAIX DE VOUGOUX (L. C. Antoine), VII. 757; X. 102—in Egypt, VIII. 488; V. 574—his death at Marengo, X. 119.
- DESAULT (Pierre Joseph), VII. 757—his connection with Bichat, IV. 717—his surgical improvements, XX. 818.
- DESCANT, in music, VII. 758.
- DESCARTES, VII. 758. See Cartes, Des.
- DESCENSION, in astronomy, VII. 758.
- DESCENT, VII. 758—of dignities—of genealogy, *ib.*
- Deschamps (Bernard), his work on the wings of Lepidoptera, IX. 18.
- Descloiseaux (M.), on biaxial crystals, XVI. 654, 655.
- Descloizite, mineral, XV. 106.
- Description, historical, XI. 547.
- DESERT, VII. 758; XVII. 614—of Egypt, VIII. 423, 514, 515—of Gobi, III. 732—botanical region, V. 228; XVII. 628. See Sahara.
- Desertas, islands near Madeira, XIII. 799.
- Desertion, as a ground of divorce, XII. 54—of sailors, during war, XIII. 288.
- Desèze, X. 74, 75.
- DESHACHE, in heraldry, VII. 758.
- Desiccation, seasoning timber by, XX. 169, 170.
- DESIDERATUM, VII. 758.
- Desideri, his geographical discoveries in Asia, III. 754.
- Desiderius, king of the Longobards, XII. 643.
- DESIGN, VII. 758—in manufactories—in painting—in music, *ib.*—in architecture, III. 509, 492—argument for the existence of God from, XXI. 187.
- schools of, VII. 758; XXI. 323—in Edinburgh, VIII. 396—in Belgium, IV. 622.
- DESIGNATION, VII. 758.
- DESIGNATOR, VII. 758.
- Desirade, island, XI. 72.
- Desires, XIV. 579; XIX. 112, 116.
- Deslongchamps (Eudes), on asterias, XXI. 994.
- Desmarest on the mammalia, XIV. 130—on birds, XVI. 730.
- Desmarts (Telephe), his work on entomology, IX. 24.
- Desmidiaceæ, different views as to their nature, III. 206, *n.* 2.
- Desmidiæ, plants, V. 218.
- Desmine, mineral, XV. 76.
- Desmodus, skull and teeth of, XVI. 452.
- Desmond, Irish family, XII. 473; XIII. 72, 75; XV. 686—rebellion and defeat of, XII. 477.
- Desmoullins (A.), his division of the indigenous Americans, II. 676.
- (CAMILLE BENOÎT), VII. 759, 651; X. 71—his execution, 85—extract from his *Vieux Cordeliers*, 86, *n.*
- DESNA, Russian river, VII. 759; XIX. 515.
- Desolation (island of), IV. 268; XIII. 71.
- Desor (M.), his arrangement of echinides, XXI. 991.
- Desormes (M.), on evaporation, IX. 408.
- Despard (Colonel), executed for high treason, V. 592.
- Despencer (Hugh le), VIII. 681.
- DESPOT, VII. 759.
- DESPOTICAL, VII. 759.
- Despotism, X. 733—in Asia, III. 750; Burmah, V. 780; Dahomey, VII. 620; Persia, XVII. 426; Siam, XX. 233—in Sweden, 857.
- Despoto-Dagh, mountain, XXI. 376.
- DESPOUILLE, in heraldry, VII. 759.
- DESPREAUX, VII. 759. See Boileau.

DES—DEV

- Despretz on the power of conducting heat in different bodies, XI. 261.
- Dessaigues on the phosphorescent effects of electricity, VIII. 598.
- Dessaix. See Desaix.
- Dessalines, governor of Hayti, XI. 257.
- DESSAU, German city, VII. 759.
- DESSERT, VII. 759.
- DESTINY, VII. 759. See Fate.
- Destouches (M.), comedy by, I. 250, and *n.*
- Destructiveness, XVII. 562.
- DESULTOR, VII. 759.
- Desvauxiaceæ, nat. order of plants, V. 215.
- Detail, in architecture, III. 509.
- Deterioration of domesticated animals, III. 182.
- DETERMINATE problem, VII. 760.
- SECTION, VII. 760.
- DETERMINATION, in mechanics, VII. 760—in logic, XIII. 572.
- Determinatives, in Egyptian language, XI. 419, 420, 423, 424.
- DETINUE, in law, VII. 760.
- DETMOLD, German city, VII. 760.
- DETONATION, in chemistry, VII. 760.
- DETRANCHE, in heraldry, VII. 760.
- DETRITUS, VII. 760.
- DETROIT, in United States, VII. 760; XIV. 740.
- Fort, taken by the British in 1814, V. 616.
- river, VI. 137.
- Detrusion, I. 875.
- Dettingen, battle of, V. 459.
- DEUCALDONIUS OCEANUS, VII. 760.
- DEUCALION, VII. 760, 710, 712.
- DEUNX, Roman weight, VII. 761.
- DEUTEROCANONICAL, VII. 761.
- DEUTERONOMY, VII. 761; XVII. 400, 402.
- DEUTEROPOTMI, VII. 761.
- DEUTEROSIS, VII. 761.
- Deutz, an adventurer, X. 207.
- DEUX PONTS, VII. 761.
- DEVA, VII. 761.
- DEVAPRAYAGA, in Hindustan, VII. 761.
- Devario, genus of fishes, XII. 257.
- Development, construction of maps by, X. 492, 488.
- Devenish island, IX. 514.
- DEVENTER, town in Holland, VII. 761.
- DEVEREUX (Robert), earl of Essex, VII. 761; VIII. 713, 714.
- Deversoirs, XII. 121.
- Deviations in the course of projectiles, XI. 116, 127.
- DEVICE, in heraldry, VII. 762—devices on coins, XVI. 354, 381.
- DEVICORTA, town in India, VII. 762.
- DEVIL, VII. 762—Bougeant's notion that beasts are animated by devils, V. 700, 701—Luther's altercations with, III. 312—notion of, by the Scandinavians, XV. 767. See Dæmon, Dæmoniac, Demonology, Satan, Witch.
- Devil's Bridge, in Wales, VI. 233.
- Deville (Mr.), his collection of skulls, XVII. 563.
- Devillers (M.), his works on insects, IX. 21.
- DEVINCTIO, VII. 762.
- DEVISE, in law, VII. 762.
- DEVIZES, in Wiltshire, VII. 762; XXI. 879.
- Devon ironworks, VI. 750.
- rivers, VI. 749.
- Devonian period, in geology, XV. 199—fishes of, XII. 348, 349, 350, 351; XVII. 117 *et seq.*; 640—mollusca of, XV. 403; XVII. 103—corals, 96—rocks in Germany, X. 584; in New York, XVI. 215—in Orkney, 719—ichthyodolulites of, XVII. 117—fossils, 98 *et seq.*—in Russia, XIX. 517—rocks in Scotland, 791, 793—in Spain, XX. 485.
- DEVONPORT, VII. 762; XVIII. 20.
- DEVONSHIRE, VII. 762—cattle of, II. 341—small field enclosures in, 269, *n.*—population and value of property, VIII. 754—rocks of, XV. 199, 201, 204—irrigation in, XII. 614—arsenic from, XV. 246—fisheries, IX. 643, 648, 649—pauperism in, XVIII. 304, *n.* 3—woollen manufactures, XXI. 914.

DEV—DIA

Devonshire, Duke of. See Cavendish (Wm.)
 DEVOTION, VII. 764—a principal feature in the character of chivalry, VI. 603.
 DEW, VII. 765; XIV. 653—dew-point, IX. 411; XIV. 653; VI. 464—in Forfarshire, IX. 782—at Funchal, IV. 184—Dalton's experiment on the dew-point, I. 934—dew-point hygrometer, 935—Dr Wells on, 954; VII. 770; XI. 265; XIV. 653—dew-retting of hemp and flax; see these articles. See Evaporation.
 DEWAS, town in Hindustan, VII. 770.
 Deweylite, mineral, XV. 80.
 De Winter (Admiral), his engagement with the British fleet at Camperdown, V. 561; VIII. 253; X. 107.
 DE WITT (John), VII. 770; V. 423—on life-annuities, III. 220—his intimacy with Sir William Temple, XXI. 149.
 Dewrance (John), his improvement of steam-engine valves, XX. 586.
 DEWSBURY, in Yorkshire, VII. 771; XXI. 958.
 Dexia, genus of insects, IX. 249.
 Dexiphanes, architect, II. 469.
 DEXTANS, Roman weight, VII. 771.
 DEXTER, in heraldry, VII. 771.
 DEXTRENE, VII. 771; V. 320; IX. 756; II. 380; VIII. 48—optical properties of, XVI. 539, 681—mode of procuring, 681, n. 1.
 DEXTROCHERE, in heraldry, VII. 771.
 DEY of Algiers, VII. 771.
 DEYNSE, town of Belgium, VII. 771.
 DEYRAH, town in Hindustan, VII. 771.
 Dezima, island, XV. 770.
 DEZPHOUL, Persian town, VII. 771.
 DHAR, in Hindustan, VII. 771.
 Dhawalagiri, one of the Himalayas, XI. 441.
 DHARWAR, in Hindustan, VII. 771.
 Dhenwars of Nepal, XVI. 144.
 Dheras, class of people in Gujerat, XI. 92.
 DHOOLOOOR, in Hindustan, VII. 771.
 Dhourra. See Durra.
 Dhuns, among the Himalayas, XI. 438.
 Diabase rock, XV. 135.
 DIABETES, VII. 772; XVII. 666—in cattle, XXI. 570—Dr Rollo's treatment of, VIII. 24.
 DIACAUSTIC CURVE, VII. 772.
 DIACHYLON, in pharmacy, VII. 772.
 Diacrasite, mineral, XV. 82.
 Diaconus (Paulus), on the Lombards, XIII. 638, 639, 643.
 Diacope, genus of fishes, XII. 276.
 DIACOUSTICS, VII. 772. See Acoustics.
 DIACRII, Athenian faction, VII. 772.
 DIADEM, VII. 772. See Crown.
 — spider, III. 381.
 Diademæ, fossil echinoidea, XVII. 100.
 Diadochite, mineral, XV. 101.
 DIÆRESIS, in grammar, VII. 772.
 DIAETETÆ, Athenian arbitrators, VII. 772.
 DIAGNOSIS, in medicine, VII. 772.
 DIAGONAL, in geometry, VII. 772; X. 508—diagonals, in ship-building, XX. 185—diagonal trussing, 181, 191.
 DIAGORAS, VII. 772.
 DIAGRAM, in geometry, VII. 772.
 Diagramma, genus of fishes, XII. 285, 286.
 DIAL, VII. 772—equinoctial, 777, 779—horizontal, ib., 781—vertical, 782—polar, 783—inclining, 788—Lambert's, 792—ring, 794—universal mechanical, 796—principal writers on, 776—invention of, ascribed to Anaximander and Anaximenes, III. 787—dials of clocks, VII. 3, 23—electrical, 26. See Dialing.
 DIALECT, VII. 772.
 DIALECTICS, VII. 772—Aristotle on, III. 550—of Plato, XVII. 794—definition and induction known before Socrates, XX. 398; and much employed by him, 399. See Logic.
 Diallage, mineral, XV. 82—rock, 135.
 DIALLING, VII. 772—general principles of, 776. See Dial.
 Diallogite, mineral, XV. 100.

DIA—DIB

DIALOGISM, in rhetoric, VII. 799.
 DIALOGUE, VII. 799—dialogues of ancient philosophers, III. 550—of Plato, XVII. 792, 814.
 DIALYSIS, in grammar, VII. 800.
 Dialyta, genus of insects, IX. 250.
 Dialytic telescopes, XXI. 122, 123.
 Diamagnetism, its discovery, I. 980; XIV. 16, 30—diamagnetic bodies, I. 980—discussion on the nature of, ib.
 DIAMASTIGOSIS, VII. 800.
 DIAMETER, VII. 800; X. 513, 540—in architecture, III. 509.
 DIAMOND, VIII. 1; VI. 471; X. 447; XV. 123—conjectured by Newton to be inflammable, I. 666—specific gravity, XII. 88—its doubly refracting and polarizing structure, XIV. 796—glazier's, VIII. 5; X. 671—cutting of, VIII. 813—distribution of the, XVII. 623—diamond mines of Bundelcund, V. 762—lenses of, XIV. 766—structure, XVI. 541—diamond mines of Brazil, V. 284, 285, 293, 298—diamond-cutters at Amsterdam, XI. 583—in Para, XVII. 266—in Hindustan, XI. 458—diamond powder, XIII. 231—Bristol diamonds, V. 371—Cornish, VII. 408—exports of, from Rio de Janeiro, XIX. 175—of Sumbulpore, XX. 807.
 — Cape, VI. 133.
 — in heraldry, VIII. 5.
 — harbour and island, VIII. 5.
 — Point, in Sumatra, XX. 803.
 — type, XXI. 402, 403.
 DIAMPER, town in Hindustan, VIII. 5.
 DIANA, goddess, VIII. 5—her temple at Ephesus, IX. 267; the object worshipped there probably an aerolite, I. 458.
 DIANÆ ARBOR, the arborescent form of silver, VIII. 6.
 DIANDRIA, in botany, VIII. 6; V. 177.
 DIANO, town of Naples, VIII. 6.
 DIAPASON, in music, VIII. 6.
 Diapensiaceæ, nat. order of plants, V. 200.
 DIAPENTE, in ancient music, VIII. 6.
 DIAPER, VIII. 6—manufacture of, at Dunfermline, 259; IX. 545—origin of the name, XXI. 966.
 Diaperales, tribe of insects, IX. 131.
 Diapering, in heraldry, XI. 330.
 Diaperis, genus of insects, IX. 131.
 DIAPHANOUS, VIII. 6.
 DIAPHONICS, VIII. 6.
 DIAPHORESIS, in rhetoric, VIII. 6.
 DIAPHORETICS, VIII. 6—for the domestic animals, XXI. 556 and n. 4.
 Diaphorus, genus of insects, IX. 243.
 DIAPHRAGM, VIII. 6; III. 39—effects of electricity on, VIII. 602—its action in breathing, XVIII. 75.
 DIARBEKIR, in Asiatic Turkey, VIII. 6.
 Diarthra, in animals, XXI. 568.
 DIARTHROSIS, in anatomy, VIII. 7.
 DIARY, VIII. 7.
 Dias de Solis (Juan), XVII. 779.
 DIASCHISMA, in music, VIII. 7.
 DIASIA, Athenian festival, VIII. 7.
 Diaspore, mineral, XV. 86.
 Diastaltic actions, in pathology, XVII. 700.
 DIASTASE, VIII. 77, 48; V. 320; IX. 757; II. 382.
 Diastata, genus of insects, IX. 265.
 DIASTEMA, VIII. 7.
 DIASTOLE, VIII. 7.
 — in grammar, VIII. 7.
 DIASTYLE, VIII. 7; III. 509.
 DIASTRMUS, in rhetoric, VIII. 7.
 DIATHESSARON, in music, VIII. 7.
 DIATHERMOUS, VIII. 7.
 DIATHESIS, VIII. 7.
 Diatomaceæ, sub-order of algæ, V. 218, 147—different views as to their nature, III. 206, n. 2—in volcanic mud, XXI. 607.
 Diatomeæ, plants, V. 218.
 DIATONIC, in music, VIII. 7; XV. 706.
 DIAZ (Bartolomeo), VIII. 7; X. 393, 712.
 Diazona, genus of mollusks, XV. 332, 330.
 DIBBLE, VIII. 7.
 DIBDIN (Charles), musician, VIII. 7.
 — (THOMAS FROGNALL, D.D.), VIII.

DIB—DID

7—his catalogue of books of the fifteenth century, IV. 708—on editions of the classics, 711—on works printed by Gutenberg, XVIII. 529—on the sale of the Roxburgh library, 532.
 Dibolia, genus of insects, IX. 150.
 Dibranchiata, order of mollusks, XV. 394—fossil, XVII. 113.
 DICÆARCHUS, VIII. 7; X. 467.
 Dicæum, genus of birds, XVI. 769.
 DICASTES, Athenian judge or juror, VIII. 7.
 DICE, VIII. 7—dice-box, V. 252.
 Diceras, extinct genus of mollusks, XV. 349; XVII. 107.
 Dichæta, genus of insects, IX. 255.
 Dichalcum, coin, VII. 67.
 Dichobune, fossil mammals, XVII. 164.
 Dichodon, fossil mammals, XVII. 164—teeth of, XVI. 465, 466, 468.
 DICHOTOMY, VIII. 8—division by, in logic, XIII. 598.
 Dichroism, XV. 58; XVI. 666; I. 915.
 Dichroite, mineral, XV. 88.
 Dick (David), his centrolinead, XVII. 446.
 Dick's educational bequest, XV. 577.
 Dickens (Charles), XIX. 283—imitated by Freytag, 293.
 DICKER, VIII. 8.
 DICKINSON (Edmund), VIII. 8.
 — (Mr), on the collieries of Lancashire, &c., XIII. 179.
 Dickoré (W.), his work on insects, IX. 23.
 Dielinous plants, V. 178, 179.
 DICOTYLEDONOUS plants, VIII. 8; V. 76, 141, 179—stem of, 80—germination of, 186—course of the sap in a dicotyledonous tree, 111—number known, 224—arrangement and characters of, 180—number of fossil species, 233—number described, XVII. 626.
 Dicotyllichthys, genus of fishes, XII. 314.
 Dicrania, genus of insects, IX. 126.
 Dicranoura, genus of insects, IX. 214.
 DICTATOR, VIII. 8; XIX. 300 *et seq.*
 Dictæa, genus of fossil fishes, XII. 342.
 Diction, poetic, XVIII. 94. See Composition, Style.
 DICTIONARY, VIII. 9—of the English language, ib.—list of dictionaries, ancient and modern, 13—Dr Johnson's, XII. 796, 797—early dictionaries, XVII. 523—prospectus of a Faroese, IV. 397—Suidas's, XX. 801—bibliographical dictionaries, IV. 713.
 Dictum, in syllogisms, XIII. 609.
 DICTYNNA, ancient festival, VIII. 14.
 Dictyogenæ, sub-class of plants, V. 178, 210.
 Dictyoptera, genus of insects, IX. 107.
 Dictyosoma, genus of fishes, XII. 810.
 DICTYS CRETENSIS, VIII. 14.
 Dicynodon, fossil reptile, XVII. 143—teeth of, XVI. 436.
 Dicynodontia, order of fossil reptiles, XVII. 143.
 DIDACTIC, VIII. 14.
 Didelphidæ, fossil, XVII. 638.
 Didelphis, genus of mammalia, XIV. 174—dentition of, XVI. 448—D. Gypsurum, XVII. 165.
 Didemnum, genus of mollusks, XV. 332.
 DIDEROT (Denis), VIII. 14—on ideas, I. 109, 110—on liberty and necessity, 150—his atheism, 181, 274—his intimacy with Catherine II. of Russia, VI. 337—his theory of beauty, IV. 539—on the blind, 778, 780—on the deaf and blind, VII. 688—his romances, XIX. 288.
 Didier, Lombard king, X. 8.
 — (Paul), French insurgent, X. 176.
 — (St), French city, VIII. 16.
 Didion, on gunnery, XI. 105, 116 *et seq.*
 Didius Julianus, XIX. 346.
 DIDO, VIII. 16; VI. 280.
 DIDRACHMA, ancient coin, VIII. 16; VII. 67.
 Didrimite, mineral, XV. 78.
 Diduction, muscles by which it is effected, III. 40.
 Didymium, a metal, VI. 488.
 Didymograpsus, graptolites, XVII. 96.

DID—DIG

DIDYMUS, ancient grammarian, VIII. 16.
 — of Alexandria, VIII. 16.
 DIDYNAMIA, in botany, VIII. 16; V. 177.
 DIE, for coining, VIII. 16—method of making, VII. 94—probable cause of it adhering to the coin, XX. 753.
 — town in France, VIII. 16.
 — (St), two French towns so named, VIII. 16.
 Diebitsch (Count), III. 648; XIX. 496; XXI. 374.
 DIEBURG, German town, VIII. 16.
 Diego García, island, XIV. 364.
 DIEMERBROEK (Isbrand van), VIII. 16.
 DIEPPE, French town, VIII. 16.
 DIES MARCHIÆ, VIII. 17.
 DIESIS, in music, VIII. 17.
 DIESPITER, VIII. 17.
 DIEST, town of Belgium, VIII. 17.
 DIET, VIII. 17—in law, ib.—Polish, XVIII. 145, 146 *et seq.*—Swedish, XX. 865.
 DIETETICS, VIII. 17; XIV. 463—principles of, IX. 768—fish, III. 93, 94—nutritive qualities of different kinds of food, 179—abstinence least supportable by the young, 180—cases of abstinence, ib.—effects of too luxurious diet on Luther, 312, n. 1—diet of the Arabs, 353—of the Chinese, VI. 589, 594—its influence on the health, XIV. 440. See Cookery, Food, Nutrition.
 DIEU ET MON DROIT, VIII. 26; XI. 338.
 DIFF, musical instrument, VIII. 26.
 DIFFARREATIO, VIII. 26; VII. 239.
 DIFFERENCE, in heraldry, VIII. 26; XI. 326.
 — in mathematics and logic, VIII. 26; XIII. 572.
 DIFFERENTIAL, VIII. 26—distinction between differentials and variations, I. 716. See Fluxions.
 — CALCULUS, VIII. 26; VI. 68; IX. 679. See Fluxions.
 — EQUATION, VIII. 26.
 — THERMOMETER, VIII. 26; VII. 102; XI. 263; XII. 187; XIII. 344, 345—invention of, I. 764, 944.
 Diffugia, genus of zoophytes, XXI. 1007.
 DIFFORM, VIII. 26.
 Diffraction of light, I. 896, 903; VI. 651; XVI. 544, 546, 605—negative, 609; diffraction-bands, I. 897.
 DIFFUSION, VIII. 26—of gases, ib.—of heat, XI. 261—of metals into vapour by electricity, VIII. 589.
 DIGAMMA, VIII. 26.
 DIGBY (Sir Edward), a confederate in the Gunpowder Plot, V. 385.
 — (Sir KENELME), VIII. 27—his account of his son's blind preceptor, IV. 781.
 Digenite, mineral, XV. 118.
 DIGENTIA, now Licenza, river, VIII. 27.
 DIGEST of Roman laws, VIII. 27.
 DIGESTER, VIII. 27—Papin's, I. 770; XXI. 774.
 DIGESTION of food, VIII. 27; IX. 768; VI. 520; XVII. 659, 660; XXI. 565—in reptiles, III. 109; XIX. 14, 47—peculiar to animals, III. 170—Luther's visions the effect of derangement of, 302, n. 1—comparative digestibility of different aliments, VIII. 21—Dr Beaumont's experiments on, IX. 768; XVII. 659—Spallanzani's experiments on, XX. 497—diseases of the digestive organs in the domestic animals, XXI. 563—organs of, in man, III. 3, 59; brutes, 105—the crustacea, VII. 538; insects, IX. 50; fishes, XII. 222; mollusca, XV. 368; birds, XVI. 734, 784; zoophytes, XXI. 973.
 — in chemistry, VIII. 27.
 Digger, V. 731—gold-diggers, IV. 276, 277.
 Digges (Cape), XVIII. 168.
 — (Sir Dudley), V. 390—his defence of the East India Company, XVIII. 215.
 — (LEONARD), VIII. 27—on Archimedes' burning glasses, VI. 5—the alleged inventor of the telescope, XVI. 524.

DIG—DIN

DIGGES (THOMAS), VIII. 27—on his father's invention of the telescope, XVI. 524, 525.
 DIGGING, in mining, VIII. 27—"diggings," in California, II. 706; VI. 97; Australia, IV. 277, 295.
 DIGIT, VIII. 27; III. 583.
 Digital numeration, II. 8.
 Digitalia, alkaloid, XIV. 439.
 DIGITALIS, genus of plants, VIII. 27; V. 202—poisonous properties, XIV. 439; XVIII. 131. See Fox-glove.
 Digitigrada, in zoology, XIV. 156; XVII. 631.
 DIGLYPH, in architecture, VIII. 27.
 DIGNE, French town, VIII. 27.
 DIGNITARY, VIII. 27.
 DIGNITY, VIII. 27—in character, 28.
 Dihong, river in Assam, III. 762.
 Dihydrite, mineral, XV. 103.
 DI, VIII. 28.
 DIAMBUS, in poetry, VIII. 28; IX. 770.
 DIPOLEIA, ancient festival, VIII. 29; V. 768.
 DIJON, French town, VIII. 28; VII. 426.
 DIKE, goddess, VIII. 29.
 — or Dyke, VIII. 29—in collieries, VII. 117—in rocks, XV. 165, 171, 187; XVII. 621—dykes of trap, XV. 189; of lava, 191—dykes in Holland, XI. 581; in volcanic cones, XXI. 604.
 DILAPIDATION, in law, VIII. 29.
 Dilatibility, a property of all bodies, XX. 751.
 DILATATION, VIII. 29—theory of the descent of glaciers, X. 638—of the air by heat, XIV. 647—increased by a small addition of force in a body much dilated, XX. 752.
 Dilator, or Speculum, XX. 811 n.
 DILEMMA, in logic, VIII. 29; XIII. 634.
 DILIGENCE, VIII. 29.
 DILL, a plant, VIII. 29; XI. 745; V. 114.
 DILLENBURG, in Nassau, VIII. 29.
 DILLENGEN, in Bavaria, VIII. 30.
 Dilleniaceæ, nat. order of plants, V. 180.
 DILLENIUS (John James), VIII. 29.
 Dillwyn (William), his opposition to the slave-trade, XX. 321.
 Dilophus, genus of insects, IX. 230.
 DILUTE, VIII. 30.
 DILUVIAL, VIII. 30.
 Diluvium, VII. 722.
 DIMACHÆ, ancient soldiers, VIII. 30.
 DIMENSION, in geometry, VIII. 30.
 Dimeracanthus, genus of fossil fishes, XVII. 117.
 Dimidiation of arms, XI. 339.
 DIMINUTION, VIII. 30.
 DIMINUTIVE, in grammar, VIII. 30.
 DIMISSORY LETTER, VIII. 30.
 Dimitri Ivanovitch, XIX. 472.
 DIMITTY, a kind of cotton cloth, VIII. 30—of Dacca, VII. 614—India, XI. 459—manufacture of, confined to the north of England, VII. 449.
 Dimorphine, mineral, XV. 122.
 Dimorphism in minerals, XV. 62.
 Dimorphodon, fossil reptiles, XVII. 151.
 DIMSDALE (Thomas), VIII. 30.
 DINAGPORE, town in Hindustan, VIII. 30.
 DINAN, French town, VIII. 31.
 DINANT, Belgian town, VIII. 31.
 DINAPOOR, in Hindustan, VIII. 31—sepoys' insurrection at, XVI. 310.
 DINARIC ALPS, VIII. 31; II. 624.
 DINDIGUL, in Southern India, VIII. 31.
 DINDING, island, VIII. 31.
 DINDYMENE, VIII. 31.
 Dinetus, genus of insects, IX. 195.
 Dingaan, Natal chief, XV. 803, 804.
 DINGLE, town in Ireland, VIII. 31.
 — Devonian beds, XV. 200.
 DINGWALL, in Ross-shire, VIII. 31; XIX. 427—vitrified fort near, IX. 791.
 DINKELBUHL, in Bavaria, VIII. 31.
 DINNEER, VIII. 32.
 Dinocrates, architect of Alexandria, II. 469.
 Dinornis, fossil birds, XVII. 155.
 Dinosauria, fossil reptiles, XVII. 150—

DIN—DIO

teeth of, XVI. 433—geological distribution of, XVII. 154.
 Dinostratus, geometer, X. 499—on the squaring of the circle, XX. 521.
 DINOTHERIUM, VIII. 32; XVII. 167, 639—dentition of, XVI. 472.
 Dinwiddie (Governor), XXI. 743, 744, 746.
 Dio of Syracuse, apparition seen by, III. 311.
 Diobolus, Grecian coin, VII. 67.
 DIOCESE, VIII. 32, 743—Irish dioceses, XII. 530—exarch of a, IX. 427. See Parish.
 DIOCLEIA, ancient festival, VIII. 32.
 Diocles of Carystus, II. 750; XX. 811.
 — geometer, X. 502—Cissoid of, 544.
 DIOCLETIANUS (C. V. Jovius), Roman emperor, VIII. 32—his palace at Spalatro, II. 126; III. 470; XX. 494—baths of, IV. 505—era of, VI. 672—Egypt under, VIII. 473—reign of, XIX. 349.
 Dioctria, genus of insects, IX. 234.
 DIODATI (Giovanni), VIII. 32—his French Bible, IV. 701.
 Diodatus, his blindness, IV. 779.
 Dioderma, genus of insects, IX. 142.
 Diodon, genus of fishes, XII. 312, 314—fossil, 338—poisonous species, XIV. 439—teeth of, XVI. 425, 426.
 — genus of mammalia, XIV. 230.
 Diodontidæ, family of fishes, XII. 312, 314.
 Diodontini, sub-family of fishes, XII. 314.
 DIODORUS SICULUS, VIII. 32—on the Amazons, II. 651—on Egyptian agriculture, 248—on the Druids, VIII. 185 *et seq.*—on Egyptian architecture, III. 435—on Egyptian writing, XI. 377—on the Egyptian judgment on the dead, X. 343—portions of his works recovered, XVII. 213—on Babylon, XIX. 846.
 Diœcean plants, V. 126, 176, 177.
 DIOGENES, of Apollonia, VIII. 32; II. 749.
 — the Cynic, VIII. 33; VII. 608.
 — LAËRTIUS, VIII. 33—Casaubon's edition of, XIX. 827.
 Diomedea, genus of birds, XVI. 812.
 DIOMEDES, VIII. 33—character of, XVIII. 101.
 DION CASSIUS COCCEIANUS, historian, VIII. 34—fragments of his History discovered, XVII. 213.
 — CHRYSOSTOM, VIII. 34.
 — of Syracuse, VIII. 34; XVII. 788, 789, 790—Dionysius dethroned by, XX. 900.
 DIONIS (Pierre), French surgeon, VIII. 34; II. 761; XX. 818.
 Dionix, genus of insects, IX. 153.
 Dionusus, VII. 712, 716.
 DIONYSIA, ancient festivals, VIII. 34; IV. 347, 348.
 Dionysiacs of Ionia, III. 401.
 Dionysian period, VI. 81.
 DIONYSIUS the Elder, VIII. 34; XVII. 788; XX. 899—his war with the Carthaginians, VI. 282.
 — the Younger, VIII. 35; XVII. 789; XX. 899.
 — the Areopagite, VIII. 35; XV. 755.
 — of Halicarnassus, VIII. 35—portions of his works recovered, XVII. 213—on the Pelasgi, 371—notice of the works of, VI. 739.
 — Exiguus, or the Little, his collection of canons and decretals, VI. 188, 189—the Christian era first employed by, 667.
 — PERIEGETES, VIII. 35; X. 468.
 DIONYSUS, or Bacchus, VIII. 35—mysteries of, XV. 753. See Bacchus.
 DIOPHANTINE PROBLEMS, in mathematics, VIII. 35.
 DIOPHANTUS, VIII. 35—work of, I. 441—his system, 707—on algebra, II. 483—translations of his work, *ib.*—his algebraical knowledge compared with that of the Hindus, 487.
 Diopsidæ, mineral, XV. 81.
 DIOPTRIC, mineral, VIII. 35; XV. 102.
 DIOPTRIC, or Dioptra, VIII. 36.
 Dioptric lights, XIII. 471, 474.
 — micrometers, XIV. 743.

DIO—DIR

DIOPTRICS, VIII. 36; XIII. 451; XVI. 556—Descartes on, VI. 279; XVI. 531.
 DIORAMA, VIII. 36.
 Diorite, XV. 135; XXI. 606—soils from, II. 391. See Greenstone.
 Dioscoriaceæ, nat. order of plants, V. 210.
 DIOSCORIDES, physician, VIII. 36—on sal-ammoniac, II. 720.
 DIOSCURI, Castor and Pollux, VIII. 36.
 DIOSCURIA, ancient festivals, VIII. 36.
 Dioscurians, in ethnology, IX. 346—language of, XIII. 215.
 Diospolis Magna, or Thebes, in Egypt, VIII. 506. See Thebes.
 DIOTA, ancient wine-vessel, VIII. 36; II. 732.
 Diotimè, XX. 374.
 Dip of the horizon, X. 480—of the magnetic needle, I. 990 n. 3, 991; XIV. 2, 57. See Needle.
 — of beds in geology, XV. 168.
 — of lodes in mining, XV. 220.
 — working, in collieries, VII. 125.
 Diphanite, mineral, XV. 79.
 DIPHTHONG, in grammar, VIII. 36—in shorthand writing, XX. 676.
 Diphucephala, genus of insects, IX. 125.
 Diphyidæ, zoophytes, XXI. 1001.
 Diphyodont mammals, XVI. 478.
 Diphyozoids, zoophytes, XXI. 1006.
 Diplacanthus, genus of fossil fishes, XII. 334; XVII. 123.
 DIPLEIDOSCOPE, VIII. 37.
 Diploctenium, fossil corals, XVII. 97.
 Diplodonta, fossil mollusks, XVII. 107.
 Diploe, II. 825; III. 19, 20.
 Diplograpsus, graptolites, XVII. 96.
 Diploite, mineral, XV. 71.
 DIPLOMA, VIII. 38, 41—examination for, VII. 144.
 DIPLOMACY, VIII. 38.
 Diplomatic establishment of the United States, XXI. 430.
 DIPLOMATICS, VIII. 41.
 Diploprion, genus of fishes, XII. 275.
 Diploptera, family of insects, IX. 196.
 Diplopterus, genus of fishes, XII. 253—fossil, 335; XVII. 123, 125.
 Diplostoma, genus of mammalia, XIV. 185.
 Diplostomum, genus of entozoa, XXI. 980.
 Diplozoon, genus of entozoa, XXI. 980.
 Dipoenus, sculptor, XIX. 853.
 DIPPET'S OIL, VIII. 42.
 DIPPING, in mining, VIII. 42.
 DIPPING-NEEDLE, VIII. 42; XIV. 82, 85; XVI. 4—Columb on, VII. 464.
 Dipriacanthus, fossil fishes, XVII. 117.
 Diprotodon, fossil mammal, XVII. 174, 175, 638—teeth of, XVI. 449.
 Dipsacaceæ, nat. order of plants, V. 196.
 DIPSAS, serpent, VIII. 43; XIX. 58.
 Dipsomania, XIV. 533.
 DIPTERA, order of insects, VIII. 43; IX. 26, 221.
 Dipteral. See Dipteros.
 Dipteraceæ, nat. order of plants, V. 185.
 Dipteron, genus of fishes, XII. 302.
 Dipteridæ, fossil fishes, XVII. 123.
 Dipterocephalæ, nat. order of plants, V. 185.
 Dipterus, genus of fossil fishes, XII. 334; XVII. 123.
 Dipterygonotus, genus of fishes, XII. 288.
 DIPTOTE, in grammar, VIII. 43.
 DIPTYCHA, VIII. 43—sacred diptycha, *ib.*
 Dipus, genus of mammalia, XIV. 184.
 Dipyrr, mineral, XV. 73.
 DIRÆ, in mythology, VIII. 43. See Furies.
 Diracæ, genus of insects, IX. 132.
 DIRECT, in arithmetic, VIII. 43.
 Direct-action horizontal steam-engines, XX. 608—vertical, 610.
 DIRECTION, VIII. 43.
 DIRGE, VIII. 43.
 DIRIBITORES, VIII. 43.
 DIRIGENT, in geometry, VIII. 43.
 Dirleton, farming in the parish of, II. 368.
 Dirom, on the corn-laws, VII. 375, 377.
 Dirt bands, in glaciers, X. 636—dirt beds in the Purbeck oolite, XV. 208.

DIS—DIS

Dis, VIII. 43.
 DISAFFORESTING, VIII. 43.
 DISC, or disk, VIII. 43—in botany, *ib.*; V. 129.
 Discharges of colours in dyeing, VIII. 316.
 Discina, genus of mollusks, XV. 339—fossil, XVII. 105.
 Discinidæ, family of mollusks, XV. 339—fossil, XVII. 105.
 DISCIPLINE, VIII. 43; VI. 640.
 DISCIPLINE, VIII. 43—Scotch Books of Discipline, *ib.*; XVIII. 490; XIX. 781—of the navy, XVI. 107; effects of, 108; its importance, XX. 28—in universities, XXI. 476, 484.
 Discoboli, fishes, table of the, XII. 307.
 Discobolus, statue of the, VIII. 44, Plate.
 Discomyza, genus of insects, IX. 256.
 Discopora, genus of bryozoa, XVII. 98.
 Discopyge, genus of fishes, XII. 327.
 DISCORD, VIII. 44; II. 110.
 Discosorus, fossil mollusks, XVII. 112.
 DISCOUNT, VIII. 44.
 Discrasite, mineral, XV. 113.
 DISCRETE PROPORTION, VIII. 44.
 — QUANTITY, VIII. 44.
 DISCRETION, VIII. 44.
 DISCUS, a quoit, VIII. 44.
 Discussion, freedom of, and its limitations, XIII. 371—incency of, *ib.*
 DISCUTIENTS, in medicine, VIII. 44.
 DISDIACLASTIC CRYSTAL, VIII. 44.
 DISDIAPASON, in music, VIII. 44.
 DISEASE, VIII. 44; XVII. 689—simulated diseases, XIV. 427—treatment of live stock under, II. 357—effects of electricity on, VIII. 603—diseases exempting from public duties, XIV. 426—diseases incident to different professions and trades, 442—effects of anger on, III. 141—mineral water for the cure of, XV. 38—diseases of nutrition, XVII. 668, 689—proximate causes of, 689—classification of diseases, *ib.*, 700, 702—of innervation, 697—reproduction, 702—functional, 691—organic, *ib.*—contagious, XIX. 612—diseases of Egypt, VIII. 422; of Greece, XI. 14—Sydenham on the history of, XX. 894—in United States, XXI. 421—treatment of the diseases of the domestic animals, 554. See Pathology, Medicine, Medical Jurisprudence, Sanitary Science, Surgery.
 Diseases of plants, V. 170—of horses, XI. 666—of silkworms, XX. 293—of timber trees, XXI. 268.
 DISEMBOGUE, VIII. 44.
 DISFRANCHISEMENT, VIII. 44.
 DISGUISE, VIII. 44.
 DISH, VIII. 44.
 Dishley breed of sheep, IV. 377. See Leicester Sheep.
 DISK, VIII. 44. See Disc.
 Disinfectants, XIX. 621.
 Disintegration of building stones, XX. 712.
 DISJUNCTIVE, VIII. 44.
 DISLOCATION, VIII. 44—in rocks, XV. 171—surgical treatment of, XX. 826.
 Disomum, IV. 735.
 DISPATCH, in gunnery, VIII. 44; XI. 105, 106.
 DISPATCH, VIII. 44.
 DISPAUPERED, VIII. 44.
 DISPENSARY, VIII. 44—London dispensaries, XIII. 673.
 DISPENSATORY, VIII. 44.
 DISPERSION, VIII. 44—of mankind, *ib.*—of light, VIII. 44; I. 920; XVI. 547, 580—polarization of light by, 647.
 Displacement of a ship, XX. 144—scale of, 162.
 DISPLAYED, in heraldry, VIII. 46.
 DISPONDER, in poetry, VIII. 46; IX. 770.
 DISPONE, in Scots law, VIII. 46.
 DISQUISITION, VIII. 46.
 Disruption of the Established Church of Scotland, VI. 405; V. 669; VIII. 393; XVIII. 495—causes of, 494.
 D'Israeli (Benjamin), Chancellor of the Exchequer, V. 672.
 DISS, town in Norfolk, VIII. 46.

DIS—DIV

DISSECTION, VIII. 46—of the human body first practised, XX. 811. See Anatomy.
 DISSEISIN, in law, VIII. 46.
 DISSENTER, VIII. 46—dissenters in England, 744—their schools, 746—their petition in 1772 for relief, V. 474—their attempts in 1787, 1790, and 1791, to obtain a repeal of the Corporation and Test Acts, 522, 536, 538—Earl Stanhope's bill in 1790 for their relief, 534—repeal of the above-mentioned acts, 652—South on their preachers, XX. 451—in Scotland, XIX. 801. See Presbyterianism.
 Dissepiments, in botany, V. 131.
 Dissidents, in Poland, XVIII. 145, 146.
 DISSIMULATION, VIII. 46.
 DISSIPATION, in physics, VIII. 46—circle of, in optics, ib.
 — of electricity, VIII. 550.
 DISSOLUTION, in physics, VIII. 46.
 DISSOLVENT, VIII. 46.
 Dissolving views, apparatus for, XIV. 793, 794.
 DISSONANCE, in music, VIII. 46; XV. 725. See Discord.
 DISSYLLABLE, VIII. 46.
 DISTAFF, VIII. 46; XX. 508.
 DISTANCE, VIII. 46—accessible and inaccessible, ib.—of the heavenly bodies, ib.—mensuration of distances by sound, II. 99—mode of finding the distances of stars, IV. 96.
 DISTEMPER, VIII. 46—in horses, XXI. 572; XI. 638; effect of, 642—in dogs, XII. 722; XI. 768; XXI. 572—vaccination for, XII. 722.
 — in painting, VIII. 47—among the Greeks, XVII. 51.
 DISTENSION, VIII. 47.
 Disterrite, mineral, XV. 79.
 Disthene, or kyanite, XV. 86—electrical properties of, VIII. 538—rock, XV. 135.
 DISTICH, VIII. 47.
 DISTICHIASIS, in surgery, VIII. 47.
 Distichocera, genus of insects, IX. 145.
 Distichodus, genus of fishes, XII. 246.
 DISTILLATION, VIII. 47; XX. 556—from potatoes, XVI. 326—in Vacuo, XX. 556—in Clackmannanshire, VI. 750—in Ireland, XII. 521—Scotland, XIX. 805—Sweden, XX. 862—analysis of beer by, V. 337—perfumes made by, XVII. 408.
 Distillers, duties paid by, XIII. 435.
 DISTINCTION, in logic, VIII. 52.
 Distoma, genus of Entozoa, XXI. 980.
 DISTRAIN, VIII. 52.
 DISTRESS, VIII. 52—in English law, ib.
 DISTRIBUTION, VIII. 52—in rhetoric and painting, 53.
 — of plants, in Britain, V. 229; of classes, orders, genera and species of plants over the globe, 222—of plants in general, 219—of fishes, XII. 329; insects, IX. 63—animals, XVII. 631 *et seq.*; II. 712; III. 174. See Physical Geography.
 — of electricity, VIII. 551.
 — of steam, in the steam-engine, XX. 595.
 DISTRINGAS, in law, VIII. 53—juratores, ib.
 Distyle, in architecture, III. 509.
 DITCH, VIII. 53—in fortification, ib.; IX. 818.
 DITHYRAMBUS, VIII. 53.
 Dithyrocaris, fossils, XVII. 101.
 Ditomus, genus of insects, IX. 86.
 DITONE, in music, VIII. 53.
 Ditrema, genus of fishes, XII. 288.
 Ditriglyph, in architecture, III. 509.
 DITRIHEDRA, in mineralogy, VIII. 53.
 Ditrochaus, foot in prosody, IX. 770.
 Ditrupa, fossils, XVII. 101.
 Dittany, false, plant, V. 189.
 DITTEAH, in Hindustan, VIII. 53. V. 763.
 DITTO, VIII. 53.
 DITTON (Humphrey), VIII. 53.
 Diu, in Hindustan, VIII. 53.
 Diurna, family of insects, IX. 206.
 DIVAL, in heraldry, VIII. 54.
 DIVALIA, ancient festival, VIII. 54.
 DIVAN, VIII. 54.

DIV—DOC

DIVERGENT, VIII. 54.
 D'Ivernois (Sir Francis), his recovery of a mortuary register at Geneva, XV. 621, n.
 DIVERSIFYING, in rhetoric, VIII. 54.
 Divers, family of birds, XVI. 809.
 DIVERSION, in war, VIII. 54.
 DIVESTING, VIII. 54.
 DIVIDIVL, the pod of a plant used in tanning, VIII. 54; V. 190; XIII. 306.
 DIVINATION, VIII. 54; IV. 240, 331—by means of smoke, VI. 221—by mirrors, 339—among the Druids, VIII. 189—in ancient Athens, XX. 391—law of Constantius against, VII. 306.
 DIVINE, VIII. 54.
 Divine right of kings, V. 718, 719.
 DIVING, VIII. 55—for pearls, XVII. 357, 444—diving dress, XX. 723—how to rise to the surface after, 881.
 DIVING-BELL, VIII. 59; XI. 221—used in excavating the beds of rivers, XVI. 70.
 DIVINITY, VIII. 66—divinities of the Egyptians, 435—of Christ, proofs of, XXI. 209. See God, Theology.
 DIVISIBILITY, VIII. 66.
 DIVISION, VIII. 67—in algebra, II. 491, 495—in arithmetic, III. 587—of vulgar fractions, 599—of decimals, 601, 602, 605—by Napier's rods, XV. 778—mechanical, VIII. 67.
 — in logic, laws of, XIII. 595—compared with definition, 598—division by dichotomy, 598.
 — in a military and nautical sense, VIII. 67.
 — of labour. See Labour.
 Divisors, trinomial, in equations, IX. 294.
 Divitiacus the Ædian, VIII. 185.
 Divodasa, V. 724.
 DIVORCE, VIII. 67, 782—in Arabia, III. 353—grounds of, in Scotland, XII. 54—defences against an action of, 55—Milton's works on, XV. 25—among Mohammedans, 304.
 DIVUS and DRVA, VIII. 72.
 Dixa, genus of insects, IX. 228.
 DIXMUDE, town of Belgium, VIII. 72.
 Dixon (Jeremiah), astronomer, XIV. 336; IX. 550.
 — (Prof.), on the thermometer, XXI. 223.
 DIZIER (St), French city, VIII. 72.
 DJEBAIL, Syrian town, VIII. 72.
 Djem, his claims to the Turkish crown, XXI. 369, and n. 1.
 Djazzar, or Jezzar, Pasha, IV. 691, 692; II. 113; VIII. 489.
 DJIDDA, in Arabia, VIII. 73; III. 355, 360; XII. 785.
 Djin. See Genii.
 Dlugosz, Polish statesman and historian, XVIII. 158.
 Dmitri, XIX. 474.
 DMITROV, Russian town, VIII. 73.
 DMITROVSK, Russian town, VIII. 73.
 DNIÉPER, river, VIII. 73; IV. 743; XVII. 646; XIX. 515.
 DNIESTER, river, VIII. 73; IV. 742; XVII. 646; XIX. 515.
 DOAB, VIII. 73—doabs in the Punjab, XVIII. 687.
 — canal, XX. 799.
 Dobchick, bird, XVI. 809.
 DOBERRAN, VIII. 73.
 DOBELN, town in Saxony, VIII. 73.
 Dobereiner's instantaneous light from platinum, XXI. 630; VI. 458.
 Dobrizhoffer (M.), his account of the Abiponians, II. 41.
 DOBROUSCHA, in European Turkey, VIII. 73; VII. 654.
 Dobrowsky (Joseph), on Slavonic philology, XVII. 529.
 DOBSCHAU, town in Hungary, VIII. 73.
 DOBSON (William), painter, VIII. 73.
 — (Dr), on evaporation, IX. 410.
 DOBUNI, or Boduni, VIII. 73.
 DOCETÆ, early heretics, VIII. 73; XXI. 211.
 DOCIMASIA, VIII. 73.
 DOCIMASTIC ART, VIII. 73.
 DOCIMENUM MARMOR, VIII. 73.

DOC—DOH

DOCK, VIII. 74—docks of Sunderland, XX. 807—Bombay, V. 1—Leith, XIII. 326—Liverpool, 518—Hartlepool, XI. 235—London, XIII. 661; XIV. 808—Dublin, VIII. 226—Dundee, 257—Newcastle, XVI. 168—Portsmouth, XVIII. 379—Sheerness, XX. 95—Southampton, 453.
 DOCK-YARDS, VIII. 78—established by Henry VIII., XX. 126.
 Dock plant, V. 204.
 DOCKET, or Docquet, in law, VIII. 87.
 Dockwra (William), London penny-post established by, XVIII. 405.
 DOCTOR, VIII. 87—degree of, XXI. 447, 451, 458, 464, 470, 484. See Degree, Academical.
 DOCTORS' COMMONS, VIII. 87; VII. 113.
 DOCUMENT, in law, VIII. 87—forgery and falsification of documents, XIV. 427.
 DODD (Dr William), VIII. 87.
 — (Ralph), on dry rot, VIII. 207.
 Dodder order of plants, V. 201, 77.
 — plant, V. 173.
 DODDRIDGE (Philip), D.D., VIII. 88.
 DODECAGON, VIII. 88.
 DODECAHEDRON, VIII. 88.
 Dodecapolis, Ionian, XII. 443.
 Dodecastyle, in architecture, III. 509.
 Dodington (Bubb), VII. 582; XII. 797.
 DODO, an extinct bird, VIII. 88; XIV. 363; XVI. 796; XVII. 156, 633, 637—Strickland's work on, XX. 782.
 DODONA, town of Epirus, and seat of an oracle, VIII. 88; XV. 766.
 DODONIAN, VIII. 88.
 DODRANS, VIII. 88; XVI. 383.
 DODSLEY (Robert), VIII. 89; XIII. 525—his annual register, V. 775.
 Dodson (James), on bills of mortality, XII. 398; XV. 602.
 DODWELL (Henry), VIII. 89—on baptism, IV. 425—Dr Samuel Clarke's refutation of his statements on the immortality of the soul, VI. 757.
 Doebereiner. See Dobereiner.
 Doffing-board, in silk manufactures, XX. 282, 283, n.
 DOFRINES, VIII. 89; IX. 382.
 DOG, VIII. 89; XI. 762; XIV. 159—teeth of, XVI. 461—wild Asiatic, III. 739—vocal organs of, 101—"worm" in the tongue of, 100—language addressed to, XII. 46; XX. 220—instance of presentiment in a, V. 704—wild, of the Himalayas, XI. 455—of Lapland, XIII. 240—vaccination of, XII. 722—23—origin and varieties of, XIV. 160—poison in the bite of a mad dog, 440—employed in smuggling, X. 276—mange in, XII. 663; XXI. 578—nutritive system of, XVII. 657—in Egypt, VIII. 432—sporting dogs, XX. 218—pointers and setters, ib.—spaniel, 220—retrievers, 220—question as to the descent of all dogs from one common stock, 218—breaking of, 220—peritonitis in, XXI. 567—diseases of the ear of, 578—hydrophobia, 575. See Hound, Veterinary Science.
 DOG-DAYS, VIII. 89; VI. 173.
 DOG-FISH, VIII. 89; XII. 321, 322; IX. 763.
 DOG-STAR, Sirius, VIII. 89; VI. 173; IV. 79.
 DOG-WATCHES, VIII. 89.
 Dogbane order of plants, V. 199.
 DOGE, VIII. 89—of Genoa, X. 454—of Venice, his palace, XXI. 538.
 DOGGER, Dutch vessel, VIII. 90.
 DOGGERBANK, VIII. 90; IX. 648 and n.
 DOGGERS, VIII. 90.
 Doggett, actor, XXI. 174.
 DOGMA, VIII. 90.
 Dogmatic metaphysics, XIV. 603—subdivisions of, 604—dogmatic theology, XXI. 183.
 DOGMATICAL, VIII. 90.
 DOGMATICS, VIII. 90.
 DOGMATISM, VIII. 90—relation of scepticism to, XIX. 706.
 DOGMATISTS, VIII. 90.
 Dogwood, XVII. 764.
 Dohrn (C. A.), his work on insects, IX. 24.

DOI—DOM

DOIG (David), VIII. 90.
 DOIT, coin, VIII. 92.
 DOKKUM, town of Holland, VIII. 92.
 DOLABELLA (Publius Cornelius), VIII. 92.
 — genus of mollusks, XV. 372.
 DOLCI (Carlo), painter, VIII. 92.
 DOLE, VIII. 93.
 Dolerites, XV. 133; XXI. 606—soils from, II. 391—their association with trachytes, XV. 191.
 DOLGELLEY, in Wales, VIII. 93; XIV. 544—waterfalls near, 543.
 Dolichitis, cranium and teeth of, XVI. 453.
 Dolichopodes, family of insects, IX. 242.
 Dolichopus, genus of insects, IX. 243.
 Dolichosaurus, fossil reptiles, XVII. 152.
 Dolichurus, genus of insects, IX. 195.
 Dolium, genus of mollusks, XV. 336, 333.
 Dolum, genus of mollusks, XV. 386, 364 *et seq.*
 DOLLAR, village in Clackmannanshire, VIII. 93.
 — coin, VIII. 93; XV. 445.
 Dollart, inundated tract in Holland, XI. 581.
 Döllinger (Dr), his essay on the religion of Mohammed, XV. 304.
 DOLLOND (John), VIII. 93; II. 90; I. 749—his achromatic glasses, 750; II. 91; XVI. 535—his variation transit, and diurnal variation instrument, XIV. 81—his double-image micrometer, 747—his four-glass eye-piece, XXI. 125.
 — (George), his spherical crystal micrometer, XIV. 753—his pancreatic eye-pieces, XXI. 125.
 — (PETER), VIII. 94; XVI. 535—his achromatic glasses, II. 92—his improvement of micrometers, XIV. 748.
 Dolomedes, genus of arachnids, III. 382.
 DOLOMIEU (Diodatus, &c., de), VIII. 94.
 Dolomite, mineral, XV. 92—rock, 154—Tennant on, XXI. 153.
 DOLPHIN, VIII. 97; XII. 295; XIV. 222—velocity of its swimming, XII. 329—dentition of, XVI. 444, 445—chemical composition of the teeth of, 418—gangetic dolphin, 445—fossil species, XVII. 165.
 — in nautical language, VIII. 97.
 Dol-y-frwynog, gold deposits at, XV. 233.
 DOM or DON, VIII. 97.
 — and SOM, VIII. 97.
 DOMAT (Jean), VIII. 97.
 Dombreck, river in the plain of Troy, XXI. 356.
 Dombrowski (General), XVIII. 152, 153, 155.
 DOME, VIII. 97; III. 410, 509—seems to have been invented by the Etrurians, 401—of St Sophia at Constantinople, 402—construction of, 410—equilibrium of, 411—of St Paul's, London, 410, 411, 483—of St Peter's, Rome, 413, 452, 483; XIX. 368—best form of, III. 413—of cathedral at Florence, 450—the boast of the Italian school, 452—curves proper for, 412—dome-vaulting, 413, 414—of the Farnese Palace, 452—principles of its stability, 411—in Baghdad, IV. 363—its beauty considered, III. 483—construction of wooden domes, XIX. 388—principles of, XX. 719—to find the joints of a, 730.
 — or DOOM, VIII. 97.
 DOMENICHINO (Zampieri), painter, VIII. 97; XVII. 73.
 Domery (Charles), voracity of, VIII. 23.
 DOMESDAY, or DOOMSDAY BOOK, VIII. 98, 669—King Alfred's, II. 481.
 DOMESTIC, VIII. 99—manufactures, XIV. 281—in Russia, &c., 282—servants, 349—cleanliness, 440—life of the Egyptians, VIII. 440, 446—policy of the United States, XXI. 438.
 Domeykite, mineral, XV. 117.
 DOMFRONT, French town, VIII. 99.
 DOMIFYING, in astrology, VIII. 99.
 DOMINANT, in music, VIII. 99.
 DOMINATION, in theology, VIII. 99.
 DOMINGO (St), VIII. 99. See Hayti.
 DOMINIC DE GUZMAN, VIII. 99, 100; XII. 386; XV. 408.

DOM—DOR

DOMINICA, island, VIII. 99.
 DOMINICAL, VIII. 99.
 — LETTER, VIII. 99; VI. 80, 81.
 Dominican republic, II. 708; XI. 258.
 DOMINICANS, religious order, VIII. 99;
 XIV. 497—origin of the, XII. 387—their
 dispute with the Franciscans regarding
 the immaculate conception, 365—their
 dispute with the Cordeliers, XVII. 746.
 DOMINUS (Marc Antonio de), VIII. 100—
 on the rainbow, I. 625; XVI. 526.
 DOMINIUM DIRECTUM, VIII. 100.
 DOMINO, VIII. 100.
 DOMINUS, VIII. 100.
 Domite, XV. 132.
 DOMITIAN, Roman emperor, VIII. 100—
 reign of, XIX. 340.
 DOMREMY LA PUCELLE, French village,
 VIII. 100—birth-place of Joan of Arc,
 III. 399.
 DON, title of honour, VIII. 100.
 — COSSACKS, land of, VIII. 100. See
 Cossacks.
 — Cossacks of the, VIII. 100; VII.
 423.
 — (George), botanist, IX. 781.
 — river of England, VIII. 100.
 — river of Scotland, VIII. 100; II.
 33; XIX. 794.
 — river of Russia, VIII. 100; XVII.
 646; XIX. 515; XXI. 671.
 DONABUE, VIII. 100; V. 646.
 DONACIA, genus of insects, IX. 147.
 DONAGHADEE, VIII. 101, 122.
 Donald, king of Scotland, XIX. 748.
 DONALDSON (Walter), VIII. 101.
 — (Dr), on the Book of Jasher, XII.
 700.
 Donaldson's book on husbandry, II. 261.
 — Hospital, VIII. 401; VII. 686.
 DONARIUM, VIII. 101.
 Donat (Jerome), V. 55.
 Donatello, sculptor, XIX. 860, 861.
 DONATION, VIII. 101.
 DONATISTS, VIII. 101; II. 644—origin of,
 I. 525.
 DONATIVE, VIII. 102.
 DONATORY, in law, VIII. 102.
 DONATUS (Elius), grammarian, VIII. 102.
 — leader of the Donatists, VIII. 101,
 102.
 — (Tiberius Claudius), his Life of
 Virgil, XXI. 593.
 DONAUESCHINGEN, town of Baden, VIII.
 102—at the source of the Danube, VII.
 652.
 DONAUWERTH, town in Bavaria, VIII. 102.
 DONAX, genus of mollusks, XV. 350, 347.
 DONCASTER, in Yorkshire, VIII. 102;
 XXI. 959.
 DONEGAL, Irish county, VIII. 102.
 DONERAILE, in Cork, VIII. 106; VII. 370.
 Dongo, in Africa, III. 165.
 DONGOLA, in Nubia, VIII. 106—language
 of, XIII. 219—New and Old, VIII. 106.
 DONGURPORE, in Hindustan, VIII. 106.
 Doni (G. B.), on melody, XV. 715.
 DONJON, VIII. 106; VI. 327; XVIII. 566.
 Donkey engine, XX. 649.
 Donkin (Mr), his invention of printing
 rollers, XVIII. 547.
 DONNE (Dr John), VIII. 106—Walton's
 Life of, XXI. 696.
 Donneau di Vesé, his *Mercure Galant*,
 XVI. 197.
 DONNYBROOK, VIII. 107—fair, 214.
 Donovan (Edward), his works on insects,
 IX. 12—on birds, XVI. 731.
 DOOMSDAY BOOK, VIII. 107. See Domes-
 day Book.
 DOON, river in Ayrshire, VIII. 107; IV.
 332.
 — (Loch), XIX. 790; IV. 332.
 Dooraunes, pastoral tribe of Afghans, II.
 207.
 DOORNIK, VIII. 107. See Tournal.
 Doors, in architecture, III. 488—seldom
 used by the Romans internally, 445—in
 joinery, V. 752—hinging of, XII. 813.
 DOOSHAK, VIII. 107; XII. 719.
 Dooshee, XI. 779.
 DOR, VIII. 107.
 Doracrus, genus of insects, IX. 144.

DOR—DOU

DORADO, constellation, VIII. 107.
 DORAK, Persian town, VIII. 107.
 Doras, genus of fishes, XII. 262—their
 travels on land, 259.
 Dorat (Jean), VII. 663.
 Dorcadion, genus of insects, IX. 146.
 DORCHESTER, in Dorsetshire, VIII. 107,
 111, 268—remains of an amphitheatre
 near, 112—tumuli near, ib.
 — village in Oxfordshire, VIII. 107.
 — heights, XXI. 750.
 DORDOGNE, in France, VIII. 107.
 Dörfel on the orbits of comets, VII. 167.
 DORIA (Andrea), Genoese admiral, VIII.
 108; X. 453—his expedition against
 Algiers, II. 569.
 — palace, XIX. 369.
 DORIAN, or Doric Mode, in music, VIII.
 108; XV. 707.
 DORIANS, VIII. 108; XX. 499.
 DORIC, VIII. 109—order of architecture,
 ib.; III. 514, 515—conjectures as to its
 origin, 441—Roman, 444, 469, 475—
 modern Italian, 451, 477—Greek, 460,
 463—remarks on, 486.
 — DIALECT, VIII. 109—of Yorkshire,
 XXI. 959.
 — MODE, in music, VIII. 110. See
 Dorian Mode.
 DORING, or Daring, VIII. 110—Doring-
 glass, XIX. 93.
 DORIS, state of ancient Greece, VIII. 110.
 — genus of mollusks, XV. 371.
 — steam-ship, trials of screw-propel-
 lers in, XX. 660.
 DORKING, town in Surrey, VIII. 110—
 fowls, II. 356; XVI. 788; XX. 836.
 DORMANT, in heraldry, VIII. 110; XI. 332.
 DORMER-WINDOW, in architecture, VIII.
 110.
 DORMITORY, VIII. 110.
 DORMOUSE, VIII. 110; XIV. 180—its hy-
 ibernation, III. 180.
 DORNBERN, town in the Tyrol, VIII. 110.
 DORNER on ethics, XV. 537—38.
 DORNOCH, VIII. 110; XX. 842.
 — FIRTH, VIII. 110; XIX. 794; XX.
 841—tidal phenomena of, XVI. 58—bar
 in, 80, 81.
 DOROGOBUSH, Russian town, VIII. 110.
 DORPAT, in Livonia, VIII. 110—observa-
 tory of, III. 819—telescope, IV. 150; I.
 752, n.—university of, XIX. 531, 532;
 XXI. 492.
 DORSAL, VIII. 113—vertebræ, 'in man,
 III. 6—in brutes, 75, 84—vessel, in
 insects, IX. 48—fins, XII. 206.
 Dorse, fish, XII. 269.
 DORSETSHIRE, VIII. 110—sheep, II. 346—
 population and value of property, VIII.
 754—great oak in, XXI. 270.
 Dorsibranchia, order of annelides, XI. 296.
 DORSIFEROUS plants, VIII. 113.
 DORT, in Holland, VIII. 113—synod of,
 III. 617; XI. 573, 588; XVIII. 488.
 Dorthes (Mr), on a swarm of ants at
 Montpellier, III. 265.
 DORTMUND, in Westphalia, VIII. 113.
 Dory, family of fishes, XII. 298.
 — fish, XII. 298; IX. 634—as an
 article of food, 765.
 Dorycera, genus of insects, IX. 255.
 Doryichthys, genus of fishes, XII. 315.
 Dorylus, genus of insects, IX. 194.
 Doryphrys, genus of fishes, XII. 313.
 Doryphora, genus of insects, IX. 149.
 DORYPHORI, VIII. 113.
 Doryphorus, genus of reptiles, XIX. 31.
 Dorypterus, genus of fossil fishes, XVII.
 125.
 Doryrhamphinae, sub-family of fishes, XII.
 315.
 Doryrhamphus, genus of fishes, XII. 315.
 DOSITHEANS, Samaritan sect, VIII. 113.
 DOSSER, VIII. 113.
 DOSSIL, in surgery, VIII. 113.
 DOTIS, town of Hungary, VIII. 113.
 Dots, engraving in, VIII. 799, 800.
 DOTTARD, VIII. 113.
 Dotterel, bird, XVI. 797—shooting of,
 XX. 216.
 DOUAI, or DOUAY, French town, VIII. 113
 —bible, IV. 703.

DOU—DOW

DOUBLE-BASS, VIII. 113; XV. 709.
 Double counterpoint, in music, XV. 734.
 — entry, in book-keeping, IV. 29.
 Doubleday (Edward), his entomological
 works, IX. 19.
 — (Henry), his work on Lepidoptera,
 IX. 20.
 Doublers, electrical, VIII. 614.
 DOUBLET, a counterfeit gem, VIII. 113—
 lenses, XIV. 771, 773, 774, 775.
 DOUBLETS, a game, VIII. 114.
 DOUBLING, VIII. 114—in silk manufacture,
 XX. 281, 284.
 DOUBLOON, coin, VIII. 114; XV. 442.
 DOUBS, in France, VIII. 114.
 Douce (Mr), on the Morris dance, XV.
 598.
 DOUCHE, VIII. 114.
 Douff, VIII. 26.
 DOUGLAS, capital of the Isle of Man, VIII.
 119; XIV. 245, 246.
 — castle of, anecdote regarding, VI.
 609.
 — earls of, XIX. 759, 770 *et seq.*
 — (GAVIN), bishop of Dunkeld, VIII.
 114—on Caxton's translation of Virgil,
 IV. 710.
 — (Sir Howard), on gunnery, XI.
 122, 125, 127, 139, 144—on carronades,
 141—on Hale's rockets, 143—his work
 on artillery, 145.
 — (James), of Cavers, on Goethe, X.
 700.
 — on the peritoneum, II. 838.
 — (Mr), botanist, his death in the
 Sandwich islands, XVIII. 271.
 DOULEIA, VIII. 120.
 DOUNE, in Perthshire, VIII. 120.
 DOUR, town in Belgium, VIII. 120.
 DOURO, river, VIII. 120; XVII. 605, 646
 —dispute between Spain and Portugal
 about the navigation of, XVIII. 391—
 wine districts of, 397; XXI. 884, 885—
 passage of, by the British, 822.
 DOW (Gerhard), painter, VIII. 120.
 DOVE, VIII. 120. See Pigeon.
 — (M.), on isothermal lines, VI. 772,
 773—on atmospheric pressure, 773;
 XIV. 668, 669—his law of storms, VI.
 774—on the variation of the needle,
 XIV. 54—his law of rotation of the
 wind, 649—on temperature, 673; XVII.
 613—on the dependence of atmospheric
 pressure, &c., on the direction of the
 wind, XIV. 677, 678—his works on
 meteorology, 689—his chart of isab-
 normal lines, 611—area of greatest cold
 indicated by, XVIII. 177.
 — river, VII. 754; XX. 529.
 Dove-colour, dyeing of, VIII. 320.
 DOVE-TAILING, VIII. 120; XII. 810.
 DOVER, in Delaware, VIII. 121; VII. 704.
 — in Kent, VIII. 120—population,
 XIII. 67—harbour of refuge at, XI. 222
 —foundations of the pier at, XX. 723.
 — in New Hampshire, VIII. 121;
 XVI. 174.
 — straits of, VIII. 792—Blanchard's
 aerial voyage across, II. 178.
 Doveran, river, XIX. 794.
 Dove Fjeld, mountains, XVI. 320.
 Dow (Alexander), on the Oude family,
 XVII. 19, 20.
 DOWAGER, VIII. 121.
 Dowdal (Archbishop), XII. 476.
 Dowdeswell (Mr), on the state of crime
 in India, XI. 521, 522.
 DOWEL, in carpentry, VIII. 121.
 Dowelling, in joinery, V. 750.
 DOWER, VIII. 121.
 Dowlais foundry blast furnace, XII. 545,
 546.
 DOWLAS, coarse linen cloth, VIII. 121.
 DOWLETABAD, in Hindustan, VIII. 121.
 DOWN, Irish county, VIII. 121—agricul-
 tural statistics of, XII. 516, 517.
 — of birds, VIII. 124—elder, 518.
 — of plants, XI. 183; V. 75.
 DOWNHAM, town in Norfolk, VIII. 124.
 Downie (David), V. 555.
 DOWNPATRICK, VIII. 124, 122—abbey of,
 124—Struel Wells near, ib.
 Downs, VIII. 124—in Dorsetshire, 111—

DOW—DRA

Kent, XIII. 64—Surrey, XX. 836—
 Sussex, 839.
 Downs, roadstead off the coast of Kent,
 VIII. 124; XIII. 65.
 DOWNTON, town in Wiltshire, VIII. 124.
 DOWRY, VIII. 124, 121.
 DOXOLOGY, VIII. 124.
 Doyère (L.), his work on insects injuri-
 ous to corn, IX. 23.
 D'Oyly's Letters to Sir William Drum-
 mond, VIII. 195.
 Drab, dyeing of, VIII. 320.
 DRABLER, VIII. 124.
 DRABS, VIII. 124.
 DRACHMA, VIII. 124; VII. 67; XVI. 359.
 DRACO, Athenian lawgiver, VIII. 124; IV.
 193—legislation of, 213.
 — constellation, VIII. 124, 125; IV.
 79.
 — genus of reptiles, XIX. 32.
 DRACONARIUS, VIII. 125.
 DRACONTIC month, VIII. 125.
 DRAGOMAN, VIII. 125.
 DRAGON, fabulous serpent, VIII. 125;
 XIX. 32, 33—in heraldry, XI. 334.
 — Head and Tail, VIII. 125.
 DRAGON's blood, VIII. 125.
 Dragon-fly, IX. 176—lives after decapita-
 tion, III. 177—fossil dragon-flies, XVII.
 103.
 Dragon-trees, V. 84, 212—of Orotava, 101;
 VI. 166—Madeira, XIII. 800.
 DRAGONNEE, in heraldry, VIII. 125.
 DRAGOON, VIII. 125. See Army, Cavalry.
 Dragoon horses, XI. 657.
 DRAGOONING, VIII. 125.
 DRAGUIGNAN, town of France, VIII. 125.
 DRAINAGE, VIII. 125; II. 287, 398; V.
 163—of towns, III. 494, 495; XIX. 618
 —of Bedford level, IV. 568—in Holland,
 XI. 581—of the Haarlem Meer, 173—of
 mines, XV. 226—acts for, II. 264—
 Smith of Deanston's system, ib.—pump
 for, XII. 176—of tow-paths, XVI. 57—
 increase of heat in the soil from, XI.
 700—of plantations, XXI. 273—in Cam-
 bridgeshire, VI. 115—its effect on sal-
 mon-fisheries, IX. 607, 626—drainage
 basins of rivers, XVII. 592, 646. See
 Drains.
 Drains, different kinds of town drains,
 VIII. 128; their importance to health,
 XIV. 444—building of, V. 734—direc-
 tion of, VIII. 133—depth, 134—distance
 between, ib.—in connection with irriga-
 tion, XII. 612 *et seq.* See Drainage.
 DRAKE (Sir Francis), English admiral,
 VIII. 132*; IV. 335; V. 500, 501—his
 expedition against Cadiz, VIII. 712.
 — (Dr), on Shakespeare, VIII. 153—
 on Dunbar's poetry, 247, n. 4.
 DRANKENBORCH (Arnold), VIII. 133.*
 DRAMA, VIII. 133*—ancient, 134*—mo-
 dern, 143—Chinese, VI. 579—Italian,
 II. 479—Peruvian, 688—Etruscan, IX.
 359—Spanish, XVIII. 114; XX. 494—
 Greek, 86, 381—of Alfieri, II. 479—Aris-
 totle on dramatic poetry, III. 559—
 stage-dances, VII. 646—pastoral dramas,
 XVIII. 111—female character, as ex-
 hibited in, XX. 86, 87—Spalding on the
 English, 495. See Comedy, Tragedy,
 Theatre.
 Dramali (Pasha), XI. 26, 27.
 DRAMMEN, in Norway, VIII. 169.
 DRAN (Henri-François le), French surgeon,
 VIII. 169; XX. 818.
 Draper (Dr), on the rays of the spectrum
 concerned in the decomposition of car-
 bonic acid by the green parts of plants,
 V. 105; his researches on the electro-
 motive power of heat, XXI. 654.
 Drapery, in sculpture, XIX. 857.
 Drapetus, genus of insects, IX. 236.
 Drapiez (Prof.), his works on insects, IX.
 12.
 Drassus, genus of arachnides, III. 379.
 DRASTIC medicines, VIII. 170.
 Draught of water, in ships, XX. 161, 162.
 Draughts, as a Roman game, XIII. 248.
 DRAVE, river, VIII. 170; VII. 653; XII. 10.
 DRAWBACK in commerce, VIII. 170. See
 Commerce.

DRA—DRO

- DRAWING**, VIII. 170—on stone, XIII. 511—by the camera lucida, VI. 117—drawings for joinery, XII. 806—drawing machines, XIV. 415—of miniatures, XV. 249. See Perspective.
- Drawing-frames**, in spinning, XX. 511—in weaving, XXI. 784.
- DRAY**, VIII. 175—horses, II. 337.
- DRAYTON** (Michael), English poet, VIII. 175—his praise of Herefordshire wool, XXI. 910.
- DREAMS**, VIII. 176; XIV. 583; XVII. 680; III. 321, *n.*—of the blind, IV. 778.
- DREBEL** (Cornelius), his thermometer, IV. 456—his submarine vessel, VIII. 59—his discovery of the mode of dyeing scarlet, 274.
- DREDGING**, VIII. 176; XVI. 68.
- Dreelite**, mineral, XV. 95.
- DREISSENIA**, fossil mollusks, XVII. 106.
- DRELINCOURT** (Charles), Calvinistic divine, VIII. 176.
- anatomist, II. 762.
- DRENTHÉ**, in Holland, VIII. 177.
- Drepane**, genus of fishes, XII. 302.
- DRESDEN**, VIII. 177; XIX. 685—Napoleon at, X. 163—Royal library at, XIII. 419—porcelain, XVIII. 436, 438, 445—operations of Frederick the Great near, 652, 653.
- Dress**—of the ancient and modern Egyptians, VIII. 434, 445—its importance to health, XIV. 441—in universities, XXI. 448, 476. See Clothing.
- Drest**, Pictish king, XIX. 742.
- DREUX**, in France, VIII. 178.
- DREVET** (Pierre), VIII. 178.
- Dreyer** (Mathew), his works on anonymous books, IV. 711.
- DRIFFIELD**, Great, town in Yorkshire, VI. I. 178.
- DRIFT**, in navigation, VIII. 178—in mining—sail—wood, *ib.*—nets, IX. 635.
- great northern, XV. 215.
- DRILL**, in mechanics, VIII. 178.
- in agriculture, VIII. 178; II. 274, 275.
- Drilling wheat**, compared with broadcast sowings, II. 308.
- DRILLING** of soldiers, VIII. 178.
- Drinius**, river, XI. 11.
- DRINK**, VIII. 178.
- Drinking**, process of, XVIII. 76.
- Drinodoon**, in Arran, caves of, III. 676.
- DRIPSTONE**, in architecture, VIII. 178; III. 509.
- Dritzen** (Andrew), XVIII. 526.
- DRIVING**, in metallurgy, VIII. 178.
- a sea term, VIII. 178.
- Drobisch** on logic, XIII. 577, *n.*—on syllogisms, 628.
- DROGHEDA**, town in Leinster, VIII. 178—ancient monument at New Grange, near, XIV. 377—manufactures, *ib.*—taken by Cromwell, XII. 484.
- DROHICZYN**, in Russian Poland, VIII. 179.
- DROHOBYCZ**, in Galicia, VIII. 179.
- Droits** of Admiralty, II. 144.
- DROITWICH**, in Worcestershire, VIII. 179—salt manufacture, XIX. 582, 583; XXI. 928.
- Dromas**, genus of birds, XVI. 800.
- Dromatherium**, fossil mammal, XVIII. 157.
- DROME**, in France, VIII. 180.
- Dromecius**, genus of birds, XVI. 796.
- DROMEDARY**, VIII. 180; XIV. 205—teeth of, XVI. 466—bred in some of the Canary islands, VI. 167—Arabian, III. 346—Asiatic, 740.
- Dromia**, genus of crustacea, VII. 541.
- Dromilites**, fossil crustaceans, XVII. 102.
- Dromius**, genus of insects, IX. 82.
- DROMORE**, Irish town, VIII. 180.
- DRONE**, VIII. 180. See Bee.
- DRONERO**, in Piedmont, VIII. 180.
- DRONFIELD**, in Derbyshire, VIII. 180.
- Drongos**, birds, XVI. 751.
- DRONTHEIM**, in Norway, VIII. 180. See Trondhjem.
- DROPPING-TUBE**, VIII. 180.
- Drop-measurer** (Brewster's), XII. 87.
- Drops**, form of, XII. 102.
- in architecture, III. 509.

DRO—DUB

- DROPSY**, VIII. 180; XVII. 690—in cattle, XXI. 567.
- Droseraceæ**, nat. order of plants, V. 183.
- Drosophila**, genus of insects, IX. 256.
- Drososope**, VII. 766.
- DROSSEN**, Prussian town, VIII. 180.
- Drouillard**, affair of, X. 228.
- DROWNING**, VIII. 180—death from, XIV. 430—Royal Humane Society of London, XIII. 673—why the body of a person drowned first sinks and afterwards rises again, XX. 880, *n.*
- Drug-shops**, police of, XIV. 441.
- DRUGGET**, coarse woollen cloth, VIII. 183.
- Drugs**, Himalayan, XI. 444.
- DRUIDÆ**, or **Droium**, VIII. 183.
- DRUIDS**, VIII. 183—in Anglesey, III. 146—destroyed by P. Paulinus, V. 378—in Britain, 374, 375—Cæsar on their mode of education, XI. 599; IV. 443—of Iona, XII. 441—Celtic, VI. 366—their ceremony named Deiscal, VII. 700—their glass rings, X. 658.
- DRUM**, VIII. 190—kettle-drum, *ib.*; XV. 713—bass-drum, 713—for threshing machines, II. 283—of the ear, XVII. 679.
- DRUMMOND** (William), poet, VIII. 190—his notes of Ben Johnson's conversation, XIII. 7—his bequest to the library of the University of Edinburgh, 402.
- (Sir WILLIAM), VIII. 194—on the conquests of Sesostris, III. 622, *n.* 4.
- (Dr), on intestinal worms, XXI. 977 *n.* 2, 978 *n.* 4, 980 *n.* 3.
- (Alexander), his lectures on the civil law, VII. 585 *n.* 3.
- (Mr. M.P.), his speech on the newspaper stamp duty, XVI. 191.
- (Peter), his tract enterprise, XX. 701.
- Drummond-light**, its application to light-houses, XIII. 480—as a signal in triangulation, IX. 555.
- Drumore**, battle of, V. 441.
- Drums**, fishes, XII. 284.
- DRUNKENNESS**, VIII. 196—in Lapland, XIII. 239; Norway, XVI. 326.
- Drupe**, in botany, V. 138.
- Drury** (D.), his work on insects, IX. 6.
- Lane Theatre, XIII. 675; XXI. 168, 170, 174, 176—roof of, VI. 266.
- DRUSES**, VIII. 197, 478; XX. 908; XXI. 378—their Confession of Faith, *ib.*—their contests with the Maronites and Turks, XVII. 198; XXI. 374.
- Drusilla**, XIX. 335—Jewish princess, 340.
- DRUSIUS** (John), VIII. 200.
- Drusus**, German expedition of, X. 575.
- (Livius), tribune, XIX. 320.
- DRYADES**, nymphs, VIII. 201; XVI. 396.
- DRYANDER** (Jonas), naturalist, VIII. 201.
- Dry measures**, XXI. 808.
- pile, electric or, XXI. 619.
- **ROD**, VIII. 206; V. 173—Bramah's patent for preventing, 274—in ships, VIII. 76, 77; XX. 166; means of preventing it, XVI. 98, 99; XX. 167; XXI. 279.
- Dryburgh Abbey**, IV. 681—Sir Walter Scott buried at, XIX. 823; XXI. 399.
- DRYDEN** (John), VIII. 202, 797—on the haughtiness of Hobbes, I. 338—on heroic plays, VIII. 161—his confession of indecency in his dramatic works, 163—his translations of Juvenal, XIII. 30—sum paid for the copyright of his Fables, VII. 355—poetry of, XVIII. 123—his satire on Settle and Shadwell, XX. 63, 68—on Shakspeare, 71, 72, 73—his defective reading, XXI. 172.
- Dryiophis**, genus of serpents, XIX. 57.
- Drylus**, genus of insects, IX. 110.
- Drymeia**, genus of insects, IX. 250.
- Dryomyza**, genus of insects, IX. 251.
- Dryopithecus**, fossil apes, XVII. 167.
- Dryopthorus**, genus of insects, IX. 140.
- DRYSALTER**, VIII. 213.
- DUAL**, VIII. 213; X. 747.
- DUALISM**, VIII. 213.
- Dualistic hypothesis** on the origin of evil, IX. 420.
- DUBLIN**, VIII. 213—Royal Irish Academy

DUB—DUF

- at, II. 67—bridge built by Mr Steven, VI. 382, *n.* 1—study of mathematics at, I. 807—libraries of, XIII. 404—gazette, X. 444—university, XII. 478; XXI. 485—Trinity College library, XIII. 403—newspapers of, XVI. 185—variation of the needle at, XIV. 53—meteorological observations at, 688—metropolitan police, XVIII. 207, 208—post-office statistics, 416—early printing at, 533—list of societies in, XX. 368.
- Dublinensis** (Codex), XIX. 838.
- DUBNO**, town in Russian Poland, VIII. 227.
- DUBOI**, town of Hindustan, VIII. 227.
- Dubois** (Jacques), anatomist, II. 757.
- (M.) his work on magnetic experiments, XX. 428.
- Du Bois-Raymond** (Dr), on animal electricity, I. 961—on voltaic electricity, XXI. 633.
- DUBOS** (Jean-Baptiste), VIII. 227.
- Duboscq** (M.), his manufacture of stereoscopes, XX. 685.
- DUBRIS**, Roman name of Dover, VIII. 228, 120.
- Dubrunfaut** (M.), on optics, XVI. 679, 681.
- Dubuat** (Chevalier), on hydrodynamics, XII. 73, 121, 125 *et seq.*; I. 725, 886, 887; XVI. 60—on the motion of rivers, XIX. 187—on the resistance of water, 191 *et seq.*—on seamanship, XX. 3.
- DUBUQUE**, in Iowa, VIII. 228; XII. 460.
- Ducal orders** of knighthood, XIII. 123.
- Du Cange**. See Cange.
- DUCAS** (Michael), Greek historian, VIII. 228.
- (Michael), emperor, VII. 316.
- (John), VII. 316, 317.
- DUCAT**, foreign coin, VIII. 228; XV. 441, 442, 444, 445.
- DUCATO**, Cape, ancient Leucate, VIII. 228.
- DUCATOON**, silver coin, VIII. 228.
- DUCENARIUS**, VIII. 228.
- DUCENTESIMA**, VIII. 228.
- Ducetius**, II. 421.
- DUCHAL** (James, D.D.), VIII. 228.
- Duchemin** (General), on gunnery, XI. 145.
- Duchet** (M.), on the production of wax, IV. 573.
- DUCHY**, or **Dutchy**, VIII. 228—court, *ib.*—duchies in Europe, IX. 397.
- DUCK**, VIII. 228; IX. 762; XVI. 816, 818—voice, III. 102—artificial, IV. 320—Chinese, VI. 591.
- (Dr), his enumeration of writers on feudal law, IX. 524.
- Duck-billed platypus**, XIV. 193. See Ornithorhynchus.
- Duck-shooting**, XX. 217.
- DUCKING-STOOL**, VIII. 228.
- Duckweed**, order of plants, V. 214.
- Duckworth** (Sir J.), his naval expedition to Constantinople, V. 603—his defeat of the French squadron against Jamaica, XII. 674—his passage through the Dardanelles, XXI. 371, *n.*
- DUCLOS** (Charles Pineau), VIII. 228.
- Ducouédie's** hive, III. 296.
- DUCT**, VIII. 229.
- DUCTILITY**, VIII. 229; XX. 749, 752—of metals, VI. 482.
- Ductor**, genus of fossil fishes, XII. 345.
- Dudevant** (Madame), character of her novels, XIX. 290.
- DUDLEY** (Edmund), VIII. 229.
- (JOHN), Duke of Northumberland, VIII. 229, 707.
- (Sir ROBERT), Earl of Warwick, VIII. 229.
- (Robert), Earl of Leicester, VIII. 713.
- (Lord Guildford), VIII. 707, 709.
- in Worcestershire, VIII. 229; XXI. 928—canal, *ib.*
- DUEL**, VIII. 230; VI. 611, 626, 627—with the sword, IX. 502—duty of avoiding, XV. 567—mania for duelling in the seventeenth century, XIX. 163.
- Dufay** (M.), on dyeing, VIII. 274—on electricity, 525; I. 733.
- Duff** (Patrick), of Elgin, fossil reptile discovered by, XVII. 129.

DUF—DUM

- Dufour** (Leon), his works on insects, IX. 14—on the skeleton of the articulata, 30, 31—on the arachnides, III. 373, 377, 379 *et seq.*—on earth-worms, XI. 301.
- (M. Arles), on the silk manufacture of France, XXI. 793.
- on fortification, IX. 833.
- Dufrenite**, mineral, XV. 101.
- Dufrenoy** (M.), on the hot-blast, XII. 552.
- Dufrenoyite**, mineral, XV. 119.
- Duftschild** (Gaspard), his work on insects, IX. 11.
- DUGDALE** (Sir William), VIII. 232.
- Dugés** (M.), his experiments on earth-worms, XI. 301—on entozoa, XXI. 982.
- Dugganahs**, Bornouese tribe, V. 53.
- DUGONG**, in zoology, VIII. 232; XIV. 218—section of a tooth of, XVI. 411—Arctic, its dental system, 443—jaw and teeth of, 446.
- Duguay**, Trouin, V. 282.
- DUHALDE** (Jean Baptiste), VIII. 232.
- DUHAMEL** (de Vigny le Monceau Henri Louis), VIII. 232—his artificial magnets, XIV. 69—on the structure of bone, II. 764—on bodies which do not conduct heat uniformly in all directions, I. 952—on the durability of ropes, XIX. 402—his experiments on the strength of materials, XX. 764, 773—on the growth of trees, XXI. 269—on the difference between firs and pines, 274.
- (JEAN BAPTISTE), VIII. 234.
- DULIUS** (Caius Nepos), VIII. 234; VI. 287.
- DUISBURG**, in Rhenish Prussia, VIII. 234.
- Dujardin** on the supposed organ of sight in animalcules, III. 207—on the origin of these animals, 209—his works on insects, IX. 21—on zoophytes, XXI. 977, 978, 979.
- (M.), method of microscopic illumination erroneously ascribed to, XIV. 797.
- DUKE**, VIII. 234—duke-duke, 235—coronet of a, XI. 336.
- DUKINFIELD**, in Cheshire, VIII. 235.
- DULCIGNO**, in Albania, VIII. 235.
- Dulcinus**, III. 306.
- Dules**, genus of fishes, XII. 277—fossil, 343.
- Dulfield** (J.), his works on insects, IX. 4.
- Dulong** (Pierre Louis), I. 952—his eminence as a chemist, *ib.*—on the law of cooling, *ib.*—his memoirs on the laws of heat, 953—on the elasticity of steam, *ib.*, 958—his character, *ib.*—on the expansion of mercury, 957—his method for measuring the expansion of bodies, XVIII. 703—his experiments on steam, XX. 558.
- Dulse**, V. 218.
- DULVERTON**, in Somerset, VIII. 235.
- DULWICH**, in Surrey, VIII. 235.
- College, erected by Edward Alleyn, II. 591.
- Dum Dum**, disaffection among the Sepoys at, XVI. 301.
- DUMARSAIS** (Cesar Chesenau), VIII. 235.
- Dumas** (Alexander), his Diary of a Physician, XX. 424.
- (General), on Napoleon's policy towards Poland, X. 144.
- (M.), on physiological chemistry, XVII. 654.
- Dumb**. See Deaf and Dumb.
- DUMBARTON**, Scotch county, VIII. 235—agricultural statistics, XIX. 796, 797, 798—population, 799.
- town, 236; XIX. 743.
- DUMBNESS**, VIII. 237. See Deaf and Dumb.
- Dumeril**, his classification of animals, III. 190—his arrangement of the genera of the Iguanians, XIX. 30, *n.* 4.
- DUMFRIES**, Scotch county, VIII. 237—mountains of, XIX. 790—agricultural statistics, 796, 797, 798—population, 799—trigonometrical survey of, XXI. 332, 333.
- town, VIII. 238.
- DUMONT** (Etienne), VIII. 240—Bentham's

DUM—DUN

- obligations to, I. 402—his notices of Mirabeau, XV. 259 *et seq.*
 DUMONT (Jean), VIII. 243.
 — (M.) on the rocks of Belgium and the Rhine, XV. 199.
 DUMOURIEZ (Charles François), VIII. 243; V. 544, 550; X. 66 *et seq.*
 DUN, or Burgh, VIII. 244.
 DUNA, Dwina, or Dvina, Russian river, VIII. 244; XVII. 646; XIX. 516, 514.
 DUNABURG, in Russian Poland, VIII. 244.
 Dunadeer, vitrified fort at, IX. 790; II. 33.
 Dunagoll, vitrified fort at, VI. 26.
 DUNBAR, VIII. 244—battle of, V. 413; VII. 513—herring trade of, IX. 635, n. 2—water conveyed in pipes to, XIX. 196.
 — (WILLIAM), poet, VIII. 244—character of his poetry, XVIII. 121.
 — (Dr), on the embassy from Rome to consult the Athenian laws, VI. 740.
 DUNBLANE, VIII. 251—cathedral of, XVII. 459.
 DUNCAN (Adam, Lord Viscount), VIII. 251—his victory at Camperdown, V. 561; X. 107.
 — (Dr), of Edinburgh, XIV. 424.
 — (Dr Henry), of Ruthwell, savings-banks founded by, XIX. 656.
 — (James), his works on insects, IX. 20—his *Entomologia Edinensis*, 77, n. 2—insects discovered by, 115—on the geology of Roxburghshire, XIX. 452, 453.
 — (John), of Glasgow, his tambouring machine, VII. 449.
 — (Mr), African traveller, II. 210.
 — (Mr), his arctic expedition, XIX. 170.
 — (Mr), on the use of synoptical tables, XXI. 986.
 — Scottish king, XIX. 746.
 — (THOMAS), painter, VIII. 255.
 DUNCANSBAY HEAD, promontory, VIII. 255; VI. 62.
 DUNCOMBE (William), VIII. 255.
 DUNDALK, in Ireland, VIII. 255; XIII. 701.
 DUNDAS (Henry, Viscount Melville), VIII. 255—his measures relative to the affairs of the East India Company, V. 507, 509, 514, 521, 534, 549—on the slave-trade, 541—his defence of the expedition to Holland, 573—his administration, 576—his great power, especially in Scotland, *ib.*—his defence and management of the French war, 577—charges of malversation against him, 599—his trial, 600—his services to the navy, VIII. 86—his monument in Edinburgh, 406—his connection with Pitt, XVII. 730, 742—his motion on slavery, XX. 322.
 — (General), experiments by, in firing at iron plates, XX. 183.
 — (Fort), IV. 300.
 — (Sir J. Deans, admiral), XVI. 107; XIX. 510.
 — (Thomas, Lord), steamboat constructed for, XX. 637.
 DUNDEE, VIII. 256—taken by Montrose, V. 406—docks of, VIII. 75—linen manufacture of, XIV. 285—gloves, X. 682.
 — (John Graham, Viscount). See Graham (John).
 Dundonald (Lord), on agricultural chemistry, II. 373.
 Dunedin, capital of Otago, XVI. 235.
 DUNFERMLINE, VIII. 258—railways connected with, IX. 545—manufactures of, *ib.*, VII. 641.
 Dung, use and management of, in agriculture, II. 294—analyses of different kinds of, 402, 403. See Manure.
 DUNGANNON, in Ireland, VIII. 259; XXI. 408—ancient relic near, 409.
 DUNGARYAN, in Ireland, VIII. 259—harbour, XXI. 769—fisheries, 770.
 Dunino, in Fifeshire, climate of, XIX. 795.
 Dunipace, VI. 275.
 DUNKELD, VIII. 259—cathedral of, 116;

DUN—DUP

- XVII. 459—geology of the neighbourhood, 456—larch trees at, XVI. 101; XXI. 275.
 DUNKERQUE or Dunkirk, in France, VIII. 260—put into the hands of Cromwell by the French, V. 417—sold by Charles II. to France, 422; XII. 66—harbour, X. 243—population, 277.
 DUNKERS, a German sect, VIII. 260.
 Dunleary, XIII. 94—occasion of the name being changed to Kingston, *ib.*
 Dunlin, bird, XVI. 803.
 Dunlop cheese, VII. 625; IV. 333.
 Dunlop's act regarding reformatories, XVIII. 205.
 Dunmanus bay, VII. 371.
 DUNMANWAY, in Ireland, VIII. 260; VII. 370.
 Dunmore, XXI. 750.
 DUNMOW, Great and Little, in Essex, VIII. 260—savings-bank at, XIX. 664.
 Dunn and Co., their vertical steam-engines, XX. 611—retort steam-boiler, 615—their upright boiler, 617.
 Dunn's air-pump, XVIII. 46, n. 2.
 DUNNAGE, VIII. 260.
 Dunnet Head and bay, VI. 62.
 DUNNING (John, Lord Ashburton), VIII. 260—his motion in Parliament on the influence of the Crown, V. 489—Horne Tooke's letter to, XXI. 308, 309.
 Dunnose, XXI. 331, 332.
 Dunnottar Castle, XIII. 90.
 Dunnoyer (G. V.), on the alternation of beds of rock, XV. 161.
 DUNOON, in Argyshire, VIII. 261; III. 527.
 Dunrobin Castle, XX. 841.
 DUNS (John), Scotus, VIII. 261—doctrines of, I. 325, 434.
 DUNSE, in Berwickshire, VIII. 261; IV. 679.
 DUNSTABLE, in Bedfordshire, VIII. 261—straw-plaiting at, IV. 568—population, 569—early play-acting at, XXI. 164.
 DUNSTAN (St), archbishop of Canterbury, VIII. 262, 658, 660.
 DUNSTER, in Somerset, VIII. 263.
 Dunsterville's block machinery, IV. 783.
 DUNUM, VIII. 263.
 DUNWICH, in Suffolk, VIII. 263.
 Duodecimal coinage, XV. 430.
 DUODECIMO, VIII. 263.
 DUODENUM, VIII. 263—anatomy of, III. 60.
 Duperre (Admiral), his expedition to Algiers, II. 573.
 Duperrey (Admiral), his pendulum observations, IX. 573—on the variations of the needle, XIV. 54—on the magnetic equator, 58; I. 991—on magnetic intensity, XIV. 62, 64.
 DUPIN (Louis Ellies), VIII. 263.
 — (Charles), on the character of the British army, III. 667—on the Jesuits in France, X. 223—on English dockyards, VIII. 79—on the discipline of the British navy, XVI. 108; decrease of sickness in, 106.
 DUPLÉ, VIII. 263.
 Duplex escapement, VII. 33.
 DUPLICATE, VIII. 263—in numismatics, XVI. 353.
 DUPLICATION, VIII. 263—of the cube, *ib.*
 DUPLICATION, VIII. 263.
 Duponchel (A. J.), his entomological works, IX. 14.
 DUPONDUS, VIII. 263; VII. 67.
 Dupont (Paul), his lithographic process, XIII. 512.
 — (M. H.), his works on insects, IX. 20.
 Dupotet de Sennevoy (Baron), magnetic experimentalist, XX. 426, 427—his visit to Britain, 431.
 Dupoty (Mons.), prosecution of, X. 218.
 DUPPA (Brian), English bishop, VIII. 263.
 DUPUIS (Charles François), VIII. 263.
 — (Mons.), his mission to Ashantee, III. 726.
 — (M.), his photographic process, XVII. 548.
 DUPUYTREN (Guillaume, Baron), French

DUQ—DUU

- surgeon, VIII. 264—on erectile tissue, II. 799—on the capillaries of the bones, 828.
 Duquesne (Fort), XXI. 745, 746.
 DURA MATER, VIII. 264; III. 56, 105—abscess of the, XX. 827.
 Durability of building stone, XX. 712—of timber, 166.
 DURANCE, river, VIII. 264.
 DURANDUS (Guilielmus), VIII. 264.
 DURANGO, in Mexico, VIII. 264; XIV. 727, 718.
 DURAZZO, in Albania, VIII. 265; IX. 274.
 D'Urban, town in Natal, XV. 805.
 — (Sir Benjamin), XIII. 34.
 Durckheim (Straus), on insects, IX. 41, 62—on the mollusca, XV. 319.
 DUREN, in Rhenish Prussia, VIII. 265.
 DURER (Albrecht), VIII. 265—his etchings, 800, 809—his system of fortification, IX. 817—his house at Nuremberg, XVI. 394—his merits as a painter, XVII. 74—his improvements in wood engraving, XXI. 903.
 DURESSE, in law, VIII. 265.
 D'URFEY (Thomas), VIII. 265.
 DURHAM, county palatine of, VIII. 265—breed of cattle, 267—population and value of property, 754.
 — city of, VIII. 268—cathedral library at, XIII. 394—university of, XXI. 471—mustard, XI. 744—diminished mortality in, owing to sanitary improvements, XIX. 604.
 — (Earl of), appointed governor of Canada, V. 666; VI. 159.
 — in Australia, IV. 278, 282.
 DURLACH, in Baden, VIII. 268.
 Durmast oak, XXI. 270.
 DUROTIGES, ancient British people, VIII. 268.
 Durra or dhourra, species of grain, III. 344; II. 55; XV. 17, 348; XVI. 348; XX. 52.
 DURRESTEIN, in Lower Austria, VIII. 268.
 DURSLEY, in Gloucester, VIII. 268.
 Duruy (M.), on the character of the Romans, XIX. 308.
 DURY (John), VIII. 268.
 DUSCHAN (Stephan), XX. 62.
 DUSSARA, in Hindustan, VIII. 269.
 DUSSAULX (Jean), VIII. 269.
 DÜSSELDORF, VIII. 269—school of painting at, III. 719—government of, XIX. 145.
 Dussumiera, genus of fishes, XII. 251.
 DUST or Dustee, Persian river, VIII. 269.
 — unwholesomeness of, XIV. 442, 443.
 Dust-ball, disease in cattle, XXI. 568.
 Dust-brand, a disease in wheat, V. 172.
 Dust-storms, XIV. 685.
 Dutch. See Holland.
 — gold, VIII. 269.
 — school of painting, XI. 591; III. 711; XVII. 74.
 — weight, XXI. 809.
 — West India Islands, XXI. 837.
 DUTENS (Louis), VIII. 269.
 Dutron (Abbe), on optics, XVI. 590, n. 591, n. 2.
 DUTKA, wind instrument, VIII. 270.
 Dutour (M.), on the colour of mixed plates, XVI. 623.
 Dutrochet (M.), on the cause of the ascent of the sap in plants, VIII. 603—on the capillaries, II. 799—on the skin, 834—on endosmose and exosmose movements in the sap of plants, XII. 102; V. 68—on the heat of plants, 169.
 Dutteah, V. 763.
 Duty, XV. 564 *et seq.*—collision of duties, 571—the economists on, VIII. 376—maladies exempting from public, XIV. 426—duties of parent and child, XVII. 274, 276; XV. 568.
 — in commerce, VIII. 270—excise duties, IX. 448; XXI. 59—on tea, 70, 89, 90—spirits, 73—license duties, 69—foreign duties on herring, IX. 641, n. 2—on paper, XVII. 260. See Customs, Taxation.
 — meaning of the word as applied to steam-engines, XX. 612.
 DUUMVIR, VIII. 270.

DUV—EAD

- Duval (M.), on the structure of teeth, XVI. 410, and n. 1.
 — (Jacques), his work on insects, IX. 24.
 Duverney (M.), his anatomical discoveries, II. 763.
 Duvillard (E. E.), his tables of mortality, XII. 400.
 DWALE, in heraldry, VIII. 270.
 DWARACA, in Hindustan, VIII. 270.
 DWARF, VIII. 270.
 DWIGHT (Timothy, D.D.), VIII. 271—on the utilitarian theory in morals, XV. 553, 554.
 DWINA, or Dvina, two Russian rivers, VIII. 271; XIX. 516; XXI. 398, 608. See Duna.
 Dyaks, people of Borneo, V. 49, 50.
 Dyasteridae, echinoderms, XXI. 991.
 Dycoteles, genus of mammalia, XIV. 197.
 Dydimus of Alexandria, IV. 779.
 DYEING, VIII. 272—Chinese skill in, VI. 586—of fishing lines, III. 151—of ivory, XII. 664—of beaver hats, XI. 242—of leather, XIII. 310—Berthollet's work on, IV. 677—Mr J. Wilson's improvements in, VII. 441—in Gloucestershire, X. 681. See Dyestuffs.
 DYER (Sir James), VIII. 320.
 — (Mr), on the university of Oxford, XXI. 460, n. 461.
 — (JOHN), English poet, VIII. 320; XVIII. 124.
 Dyers, diseases of, XIV. 443.
 Dyers'-broom, a dyestuff, VIII. 297.
 Dyestuffs, VIII. 282—red, *ib.*—yellow, 295, 318—blue, 301—black, 304—brown, 306—green, 309—of Hayti, XI. 254—imports of, into the United Kingdom, VIII. 734—for beaver hats, XI. 242—Tyrian dye, XXI. 406—of Honduras, XI. 612. See Anotta, Cochineal, &c.
 Dyke. See Dike or Dykes.
 DYLE, Belgian river, VIII. 320; IV. 611.
 Dynames, VII. 304.
 DYNAMETER, VIII. 320.
 DYNAMICS, VIII. 321; I. 718, 721—dynamical stability, XX. 152, 156—applied dynamics, XIV. 402—of phrenology, XVII. 560—social, XIII. 263—dynamical theory of heat, XX. 561. See Motion, Statics.
 DYNAMOMETER, VIII. 365; XIV. 404—marine, XI. 216; XX. 645—friction, 601.
 Dynasties, Egyptian, VIII. 452 *et seq.*—table of, 453.
 Dynops, genus of mammalia, XIV. 148.
 DYRRHACHIUM, VIII. 365, 265; IX. 274—siege of, in 1077, VII. 316—coins of, XVI. 370.
 DYSÆ, goddesses, VIII. 365.
 DYSART, VIII. 365—chalybeate spring near, IX. 544.
 Dysclasis, mineral, XV. 76.
 DYSCRASIA, VIII. 365.
 Dysdera, genus of arachnides, III. 378.
 DYSENTERY, a disease, VIII. 365—common in Egypt, 423; successful mode of treatment there, *ib.*—in sheep, XXI. 568.
 Dysluite, mineral, XV. 87, 108.
 DYSOREX, VIII. 365.
 DYSPÉPSIA, VIII. 365.
 DYSPNŒA, VIII. 365; XVII. 663.
 Dytilus, genus of insects, IX. 133.
 Dytiscus, genus of insects, IX. 100.
 DRYOUR, in Scotch law, VIII. 365.
 Dzerin, kind of antelope, XIV. 210.
 Dzigithai, in zoology, XIV. 200

E

- E, letter of the alphabet, VIII. 366; II. 610—in abbreviations, 18.
 EACHARD (John), English divine, VIII. 366.
 — (LAURENCE), English historian, VIII. 366.
 EADMERUS, or Eadmer, English historian, VIII. 366.

EAG—EAR

- EAGLE, a constellation, VIII. 367; IV. 80.
— base Irish coin, VIII. 367.
— bird, VIII. 366; XVI. 742; XVII. 633—its power of fasting, III. 180.
— coin of United States, XV. 442.
— in heraldry, VIII. 366—orders of knighthood, 367.
— (Thomas), tea advertised by, in 1680, XXI. 89.
Eagle-ray, fish, jaws and teeth of, XVI. 423. See *Myliobates*.
EAGLE-STONE, VIII. 367; II. 189.
Eagle-wood, XVII. 568; XX. 233.
Eagleshey, one of the Orkney islands, XVI. 718, 719.
Eaheinomawe, IV. 266; XVI. 232.
EALDERMAN, among the Saxons, VIII. 367.
Ealred, English historian, II. 429.
EAR, VIII. 367; XVII. 678, 679—muscles of, III. 39—atomy of, 45—comparative anatomy of, 98—in the mammalia, XIV. 133—pain of, in diving, VIII. 60—of fishes, III. 178; XII. 220—diseases of, in the domestic animals, XXI. 578—musical, VIII. 367; XV. 703. See *Hearing*.
Ear-trumpet, II. 106. See *Hearing-trumpet*.
Ear-wax, III. 46.
EARING, sea term, VIII. 367.
EARL, British title, VIII. 367—coronet of an, XI. 336.
— MARSHAL, VIII. 367; XIV. 318.
Earle (Bishop), his description of a sceptic, I. 51.
Earn, river and loch, XVII. 456.
EARNEST, VIII. 367.
Earnshaw (Thomas), his chronometers, VII. 30, 34.
EAR-RING, VIII. 367.
Ear-shells, XV. 380.
EARTH, VIII. 367—speculations as to its internal structure, I. 791—its annual motion round the sun, II. 36—discovery of the nutation of its axis, III. 805—measurement of the, ib.; VII. 230, 700; I. 617 *et seq.*, 836 *et seq.*; III. 812; V. 243—its motions, IV. 3—form, 5; IX. 547; X. 479; XVII. 569—ellipticity, I. 854, 815—magnitude of, 617; IV. 6; IX. 547; X. 465—weight, XVII. 569—density of the, I. 834; XV. 166, *n.*; XVII. 569—Cavendish's experiments on its density, VI. 353; I. 834—date of its creation, VI. 668, 677—rotation of, as demonstrated by Foucault's pendulum experiment, I. 854, 855—heat of, 949—radiation of, XIV. 644—effects of the sun's heat on, I. 950—total quantity received by, from the sun, ib.—nutation of its axis, IV. 15—motion of its translation, 20—effects of its motions on the appearances of the planets, 54—variations of its orbit, 106—final conflagration of, VII. 241—magnetism of, I. 990; XIV. 49; XVII. 617; its intensity, XIV. 59; nature and causes of its magnetism, 63, 64—internal heat of, 636; XV. 184; XVII. 570—use of the pendulum in determining its gravity and oblateness, 384—its surface and general divisions, X. 483—materials of which it is composed, their arrangement, &c.; see *Geology*—its surface, productions, and phenomena, see *Physical Geography*—electricity of, XXI. 116—words denoting earth, in different languages, XIII. 199. See *Figure of the Earth*.
Earth-stopping, in hunting, XII. 38.
Earth-worm, XI. 301—hermaphrodite nature of, III. 171—as a bait, 155—effects of chloroform on, VI. 631.
EARTHENWARE, VIII. 367; XVIII. 430 *et seq.*—manufacture of, in England, VIII. 732—Staffordshire, XX. 530.
EARTHQUAKE, VIII. 368; XVII. 616—earthquakes near *Ætna*, II. 194—at *Antioch*, III. 273, 274—in the *Azores*, IV. 336, 337—at *Caracas*, VI. 227—in *Chile*, 543—in *China*, 582—*Comrie*, in *Perthshire*, XVII. 616—Ionian islands, XII.

EAR—EBN

- 444, 453—*Jamaica*, 673—*Japan*, 689—*Lisbon*, XIII. 505; X. 695; XVIII. 386—*Luzon*, XIII. 742—*Merida*, XIV. 542—*Norway*, XVI. 322—*Quito*, XVIII. 738—*Smyrna*, XX. 364—*Sparta*, 501—regions exempt from, XVII. 616—waves produced by, 582.
EARTHS, in chemistry, VIII. 368; VI. 486; XV. 65—as alimentary substances, VIII. 20.
Earthworks, on railways, XVIII. 759.
Earthy poisons, XIV. 434.
Earwash, river, VII. 754—canal, ib.
Earwig, IX. 155—methods of destroying it, XXI. 549.
EASDALE, island, VIII. 368—its roofing-slates, III. 526.
EASE, sea term, VIII. 368.
EASEL, VIII. 368—easel-pieces, ib.
EASINGWOLD, in *Yorkshire*, VIII. 368.
EAST, VIII. 368.
EAST INDIA COMPANY, VIII. 368; XI. 238, 481, 485, 486 *et seq.*, 528; XIII. 670—outlying territories of, VII. 147—its government of *Ceylon*, VI. 396—parliamentary enquiry in its affairs in 1772, V. 475—subsequent proceedings, 776—charges against it, ib.—Mr Fox's bill relative to its affairs, 508; XI. 496—its misgovernment in *India*, V. 509, 519; XI. 486, 488—arbitrary conduct of its servants, 487; their maladministration, 488—Mr Pitt's bills, V. 511, 513, 514; XI. 497; XVII. 732—Mr Grant's act in 1833, XI. 528—Mr Francis's bill, V. 520—dispute with government in 1788 about the payment of soldiers sent to *India*, 528—*Burmese* war, 646, 783; XI. 508—its internal policy in the government of the country, 510—renewal of its charter in 1793, V. 549—abolition of its charter, as a trading monopoly, VII. 437; XI. 528; V. 612—its present constitution, XI. 529—exportation of bullion by, XVIII. 215—its shipping, XX. 134—quantity of tea sold by, XXI. 71—their first importation of tea, 89—summary of their trade, 90, 91; cessation of their monopoly in, 90—attack of the weavers on the trade of, 781—school at *Hertford*, XI. 358.
— (Dutch), XI. 583, 584.
East India Docks, VIII. 75; XIII. 661.
— House, *London*, XIII. 670.
East Indians, XI. 467.
East Indies, commerce of, III. 757; X. 259—manufacture of cotton in, VII. 436—coins of, XV. 442, 445. See *India*, *Hindustan*.
EASTBOURNE, in *Sussex*, VIII. 368.
EASTER, VIII. 368; I. 502—disputes about the time of observing, VI. 80; I. 525—determination of its date, VI. 86—Easter term at *Oxford*, XXI. 458.
— island, XVIII. 281—peopling of, II. 694.
Eastern (The Great) steamship, XX. 29, 139, 164, 665—comparative size of, 641.
EASTON, in *Pennsylvania*, VIII. 368.
EASTPORT, in *Maine*, VIII. 368.
Eastwick's volcanic battery, XXI. 610.
Eaton (John), his visit to the *Ladrone* Islands, XVIII. 269.
Eau de Brinvilliers, a poisonous liquid, III. 330.
— DE COLOGNE, VIII. 368; XVII. 409—distilleries of, XVIII. 669.
— DE LUCE, VIII. 368—as a remedy for the bite of serpents, XIX. 46.
EAVES, in architecture, VIII. 368.
EAVES-DROPPER, VIII. 368.
EBDOMARIUS, or *Hebdomarius*, ecclesiastical officer, VIII. 368.
EBDOME, Spartan festival, VIII. 368.
Ebenaceæ, nat. order of plants, V. 198.
EBERHARD (Johann Augustus), VIII. 368.
Ebersberg, battle of, X. 151.
EBINGEN, in *Württemberg*, VIII. 369.
EBIONITES, religious sect, VIII. 369—opinions of the, XII. 764.
Ebn Jounis, Arabian astronomer, III. 795.
— Sina. See *Avicenna*.

EBO—ECL

- EBONY, VIII. 369; V. 199—specific gravity of, XII. 89.
— order of plants, V. 198.
EBORACUM, ancient name of *York*, VIII. 370; XXI. 955.
Eboulement, III. 130.
EBRO, Spanish river, VIII. 370; III. 393; XVII. 605, 646; XX. 487.
Ebsamboul. See *Ipsamboul*.
EBUDÆ, or *Hebudes*, ancient names of the *Hebrides*, VIII. 370.
EBULLITION, VIII. 370—produced by the application of cold, XX. 556. See *Boiling*.
Eburna, genus of mollusks, XV. 387.
ECASTOR, or *Mecastor*, an oath, VIII. 370.
ECATÆA, VIII. 370.
ECBATANA, city in *Media*, VIII. 370; XIV. 421.
ECCENTRIC, VIII. 371—rod in steam-engines, XX. 584 *et seq.*
Eccentricity of the solar orbit, discovered by *Hipparchus*, III. 791.
ECHELLENSIS (Abraham), VIII. 371.
ECCLES, in *Lancashire*, VIII. 371.
ECCLESALL-BIERLOW, in *Yorkshire*, VIII. 371.
ECCLESHALL, town in *Stafford*, VIII. 371.
ECCLESIA, VIII. 371.
ECCLESIASTES, Book of, VIII. 371.
ECCLESIASTICAL, VIII. 372—academies, II. 62—calendar, VI. 79.
— Titles Bill, V. 672.
ECCLESIASTICUS, Apocryphal book, VIII. 372.
ECCOPROTICS, medicines, VIII. 372.
ECDICI, VIII. 372.
Ecdysis, IX. 57.
ECCHELON, VIII. 372.
Echeneidæ, family of fishes, XII. 271.
Echeneis, genus of fishes, XII. 270, 271.
Echidna, genus of mammalia, XIV. 193; IV. 260.
Echimys, genus of mammalia, XIV. 180—fossil, XVII. 173.
ECHINADES, islands, VIII. 372.
Echinarachnius, XVII. 100.
ECHINATE, or *Echinated*, VIII. 373.
Echinida, XXI. 984, 987, 991.
Echinidæ, echinoderms, XXI. 984—fossil, XVII. 99.
ECHINITE, fossil, VIII. 373.
Echinococcus, genus of entozoa, XXI. 978.
ECHINODERMATA, VIII. 373; III. 192; XXI. 983—fossil, XVII. 98.
Echinoidea, fossil echinoderms, XVII. 99.
Echinolampas, fossil echinoidea, XVII. 100.
Echinopora, zoophytes, XXI. 1005.
Echinops, dentition of, XVI. 452.
Echinopsis, fossil echinoidea, XVII. 100.
Echinorhinus, genus of fishes, XII. 325.
Echinorhynchus, XXI. 980.
ECHINUS, VIII. 373; XXI. 987 *et seq.*
— in architecture, VIII. 373; III. 509.
Echiopsis, genus of fishes, XII. 233.
ECHO, VIII. 373—cause of, II. 99, 106.
— in music, VIII. 373.
— in architecture, VIII. 373.
ECLJA, in *Spain*, VIII. 373.
Eckart (Master), his mysticism, XV. 756.
ECKERNFORDE, in *Denmark*, VIII. 373.
Eckhel (Joseph), on ancient coins, XVI. 360, 384.
ECKIUS, or *Eck* (Joannes), VIII. 373—his disputations with *Luther*, XIII. 726.
ECKMUHL, in *Bavaria*, VIII. 373—*Davoust* at, X. 151.
Eclampsia, disease, XVII. 700.
ECCLECTICS, VIII. 373.
ECLIPSE, VIII. 374—eclipses of the moon, IV. 45—of the sun, 47—of *Jupiter's* satellites, 70—number of, in a year, 49—list of solar eclipses visible during the present century, 50—tables for the calculation of lunar, 120—projection of lunar, 134, 141—elements for the projection of solar, 138—*Captain Cook* on an eclipse of the sun, VII. 340—mode of finding the longitude by lunar, XIII. 688—by the eclipses of *Jupiter's* satellites, ib.—of the sun, 689—eclipse of the sun in 1748, 332.
ECLIPIC, VIII. 374; IV. 12; X. 481—its

ECL—EDI

- obliquity, IV. 12—displacement of the, 13.
Eclogite, rock, XV. 135.
ECLOGUE, in poetry, VIII. 374—*Virgil's* eclogues, XXI. 594.
ECLUSE, VIII. 374. See *Clusius*.
Ecole Polytechnique, X. 272.
Economic geology, Museum of, XXI. 323.
Economist newspaper, XXI. 875.
ECONOMISTS, VIII. 374; I. 183; XVIII. 220, 222, 231—works published by, 222, *n.* 2—their objects and motives, 733.
ECONOMY (Political), VIII. 386. See *Political Economy*.
ECSTASY, VIII. 386; XVII. 700.
ECSTATICI, diviners, VIII. 386.
ECTHESIS, VIII. 386.
Ectopistes, genus of birds, XVI. 794.
Ectot (Manouri d'), his *Danaide* wheel, XII. 171.
ECUADOR, VIII. 386—metallic produce of, XV. 248.
Edaphodus, genus of fossil fishes, XVII. 119.
Edaphrodon, genus of fossil fishes, XII. 342.
EDDA, VIII. 388; XV. 767; XVIII. 808.
Ed-Diréeyeh, VIII. 494. See *Derayeh*.
Eddystone lighthouse, XIII. 464; III. 491—erected by *Smeaton*, XX. 335.
EDEMATOUS, VIII. 389. See *Dropsy*.
EDEN, VIII. 389. See *Paradise*.
— river, VII. 756; IX. 544.
— (Sir F. M.), quoted, VII. 374, 375, 376, *n.*—his work on the poor, XXI. 680.
EDENDERRY, in *Ireland*, VIII. 389.
EDENTATA, order of mammalia, VIII. 389; XIV. 189, 135; XVII. 631—fossil, 638; II. 774—their bones, III. 76 *et seq.*—organs of smell, 94—ears, 99—intestines, 110—of *Africa*, II. 217—of *America*, 713.
EDER, town in *Hindustan*, VIII. 389.
EDESSA, in *Macedonia*, VIII. 389.
— in *Mesopotamia*, VIII. 389; XIV. 548.
EDFU, VIII. 389—temple of, III. 458; VIII. 513; XI. 382, and *n.* 2.
Edgar, king of *England*, VIII. 659—his fleet, XVI. 89; XX. 119.
— *Atheling*, VIII. 663, 668, 670; XIX. 746, 747.
— king of *Scotland*, XIX. 749.
Edgbaston, IV. 729—botanic garden at, 731.
Edgehill, battle of, V. 403.
EDGEWARE, in *Middlesex*, VIII. 389.
EDGEWORTH (Maria), novelist, VIII. 389—on *Miss Hamilton's* Letters on Education, XI. 200—her novels, XIX. 279.
— (RICHARD LOVELL), VIII. 389.
Edh-Dhafir, king of *Egypt*, VIII. 479.
EDHILING, Anglo-Saxon title of nobility, VIII. 390.
EDICT, in law, VIII. 390.
EDINBURGH, VIII. 390—works for supplying it with water, III. 337; XII. 135—*Crawley* springs, III. 337; VIII. 405—study of mathematics at, I. 807—abattoir in, II. 11—Royal Observatory of, III. 818—Asylum for the Deaf and Dumb, VII. 686—Asylum for the Blind, IV. 776—Bible Society, 704—ale, V. 334—fall of rain at, VIII. 409—School of Design, VII. 758—excellence of its guns and rifles, XI. 101—hackney coaches first established in, VII. 42—*Cromwell* in, 512, 513—products of the gas-works of, X. 433—libraries in, XIII. 400 *et seq.*—clinical medicine at, XIV. 462—resistance to *Episcopacy* in 1637, V. 394—siege of the Castle in 1689, 440—anti-Catholic disturbances in 1779, 491—political prosecutions in 1793–94, 550—Colleges of Physicians, Surgeons, Justice, VII. 114—professorship of civil law, 585—irrigated meadows near, XII. 620; VIII. 409—leper hospital, XIII. 340—Philosophical Journal, XII. 685—police of, XVIII. 204—post-office, 416—*Edinburgh* and *Glasgow* Union Canal, XIII. 498—university of, XXI. 481—medical school of, 484; XIV. 466—ex-

EDI—EDU

- hibitions of the Royal Academy, IX. 453—gazette, X. 444—early newspapers of, XVI. 184—school of painting in, XVII. 81—early printing at, XVIII. 533—earthen mound, 761—tunnel under, 1b.—founded by Edwin, Saxon chief, XIX. 743—establishment of savings-banks in, 656; their management, 668—dome of the Register Office, 388—list of societies in, XX. 368—stone chiefly used in building, 711—Scottish Industrial Museum at, XXI. 324.
- Edinburgh Review, XIX. 100—origin of the, XX. 349; XII. 716—Empson, editor and contributor to, VIII. 653—on salmon-fishing, IX. 608, 614—on the character and genius of Dryden, VIII. 204—on the radius, III. 577—on Greek arithmetic, 578—on palimpsests, IV. 705—on Hindu literature, V. 270—on Machiavelli, XIII. 778—on the intellectual character of Sir J. Mackintosh, 786—on the franchise, X. 738—on the character of Grattan, XI. 3—on Norway, XVI. 332—on the dependence of different branches of industry on each other, XVIII. 237—Constable's connection with, VII. 299—its influence on public opinion, 718—Jeffrey's editorship, 717—Macvey Napier editor, XV. 778—Sir J. Leslie's contributions to, XIII. 346—on railways, 797—Sir Walter Scott an occasional contributor to, XIX. 532—Sir J. Mackintosh's contributions to, XIII. 786—Sydney Smith's connection with, XX. 349—Dr Adam Smith's contributions to, 339, 345; Spalding's, 495, 496.
- EDINBURGSHIRE, VIII. 408—flax prices in, IX. 533—analysis of the soil of, II. 393—agricultural statistics, XIX. 796, 797, 798—population, 799—trigonometrical survey of, XXI. 333.
- Edingtonite, mineral, XV. 77.
- Editha, queen of Edward the Confessor, VIII. 662.
- Editions of books, IV. 707.
- Edmondia, fossil mollusks, XVII. 105, 108.
- EDMONTON, in Middlesex, VIII. 411.
- Edmund, king of England, VIII. 658.
- Ironside, VIII. 662.
- Edolius, genus of birds, XVI. 751.
- Edom, or Idumæa, VIII. 411; XII. 357.
- Edred, king of England, VIII. 658.
- Edriophthalma, crustacea, VII. 542—their nervous system, 538.
- EDRISI, Arabian geographer, VIII. 411.
- EDUCATION, VIII. 412—its effects used as an argument against free agency, I. 269—study of medicine fitted to develop the intellect, 101—of farmers, II. 366—effects of, on taste, IV. 545—Brougham's education bill in 1821, V. 630—its importance in a manufacturing country, VII. 457—the economists on, VIII. 379—study of natural history, IX. 26—Fellenberg's system, 500; Pestalozzi's, XVII. 478, 479; Lancaster's, XIII. 181—promoted by the Jesuits, XII. 754—theological, XVIII. 494, 495—philology a necessary branch of, XVII. 538—proportion of married people in England who can neither read nor write, XVIII. 873; in France, 1b.—views of Bacon on, I. 38; Locke, 267; XIII. 548; Aristotle, III. 568; Milton's work on, XV. 25; Parr's, XVII. 305—Plato on, 809, 812—schools as affecting health, XIV. 444—Hannah More's works on, XV. 580—in Afghanistan, II. 205—Armagh, III. 614—Austria, IV. 318—Australia, 291—Bavaria, 519—Bengal, 652—Birmingham, 731—Bogota, 811—Bolivia, 829—Brazil, V. 297—Calcutta, VI. 70—Canada, 157—Carlow, 240—Cavan, 348—Chile, 546—Circars, 730—Clare, 755—Connecticut, VII. 295—Constantinople, 302—Cork, 372—Crete, 496—Denmark, 750—Donegal, VIII. 104—Down, 122—Dublin, 215, 222, 223—Egypt, 445—England, 745—Florida, IX. 668—Fermanagh, 515—France, X. 268—Genoa, 453—Germany, 591—Glasgow, 652—Cape of Good Hope, 715—Greece, XI. 20—

EDU—EDW

- Hanover, 213—Hindustan, 531—Holland, 589—Hungary, XII. 18—Iceland, 199—Illinois, 362—Indiana, 374—Ionian Islands, 447—Ireland, 533, 534—Italy, 661—Jamaica, 676—Japan, 695—Kentucky, XIII. 70—Kildare, 82—Kilkenny, 85—King's County, 91—Kirkcubrightshire, 100, 101—Lancashire, 180—Leeds, 314—Leicestershire, 321—Leitrim, 328—Limerick, 488—London, 666—Lombardy, 647—Londonderry, 682—Longford, 684—Louisiana, 700—Louth, 702—Madeiras, 797—Madrid, 805—Isle of Man, XIV. 246—Manchester, 253—Maryland, 331—Massachusetts, 341—Mayo, 370—Meath, 376—Mexico, 718—Monaghan, XV. 410—Morocco, 595—New Brunswick, XVI. 164—New Hampshire, 174—New Jersey, 176—New Orleans, 177—New York, 220, 229—Norway, 331—Nova Scotia, 344—Ohio, 490—Paris, XVII. 284—Pennsylvania, 398—Persia, 429—Peru, 474—Petersburg, 491—Portugal, XVIII. 396—Queen's County, 728—Roscommon, XIX. 421—Sardinia, 639—Scotland, 801; VIII. 747; I. 249—Two Sicilies, XX. 255—Sligo, 330—Sweden, 866—Spain, 492—Sparta, 503—Tennessee, XXI. 156—Tipperary, 286—Turkey, 381—Tyrone, 407—United States, 423—Venezuela, 537—Virginia, 599—Waterford, 769—Westmeath, 839—Wexford, 846—Wicklow, 859—Wurtemberg, 939. See National Education, Universities, Blind, Deaf and Dumb.
- Education Grant, VIII. 747; XIX. 802.
- EDULCORATION, VIII. 412.
- EDWARD, name of several English kings, VIII. 412.
- the Confessor, VIII. 662—his character, 663.
- the Martyr, VIII. 660.
- I., reign of, VIII. 680—his death and character, 681—his fox-hounds, XII. 34—constitution of the Mint under, VII. 74—act for assaying gold and silver, 77—castle of, at Caernarvon, VI. 55—his war with France, X. 14—wars with Scotland, XIX. 754; XXI. 686—naval engagement with the French, XVI. 90—Ireland, in the reign of, XII. 469—expulsion of the Jews by, 779.
- II., reign of, VIII. 681—deposition and murder of, 682—his constitution of the Mint, VII. 74—his treatment of the Irish, XII. 470—his invasion of Scotland, XIX. 755—woollen manufactures in his reign, XXI. 913.
- III., reign of, VIII. 682—Turner on the reign of, 683—laws regarding the coinage, VII. 77—his wars with France, X. 16 *et seq.*—his treatment of the Irish, XII. 470—his encouragement of chivalry, VI. 622—his fondness for the chase, XII. 34—his navy, XVI. 90; XX. 121—his household, XI. 773—woollen manufacture in his reign, XXI. 914—his encouragement of textile industry, 780.
- IV., reign of, VIII. 691—death and character, 692—his household book, XI. 773—his laws for promoting archery, III. 425.
- V., reign of, VIII. 693—Sir Thomas More's Life of, XV. 582—enactments against vagrancy, XVIII. 300.
- VI., reign of, VIII. 706—state of the currency under, VII. 72—statutes against forestalling and engrossing corn, 375—religious persecution, 482—the Reformation promoted by, XVIII. 829—naval affairs in the reign of, XX. 126.
- son of Alfred the Great, VIII. 657.
- the Black Prince, VI. 614, 621; VIII. 683; X. 17, 18—his expedition to Spain, XX. 464.
- Edwardes (Lieut.), his operations in the second Sikh war, XVIII. 693.
- EDWARDS (Bryan), historian, VIII. 413.
- (Dr W. F.), on the effect of light on the lower animals, XIII. 460; VI. 781.

EDW—EGY

- EDWARDS (George), naturalist, VIII. 412—on birds, XVI. 728.
- (George), on blasting rocks in the bed of the Severn, XVI. 70.
- (JONATHAN), VIII. 415—his scheme of necessity, I. 148—anticipated by Collins, 1b.—moral and intellectual character of, 356—on virtue, XV. 559; makes it consist in the love to being, 561; I. 357—on original sin, XXI. 205.
- (Milne), on the mollusca, XV. 319 *et seq.*—on fossil corals, XVII. 96—on zoophytes, XXI. 999, *n.* 8, 1004.
- Edwin, or Edwy, king of England, history of his reign, VIII. 658.
- Edye (Mr), on the weight of timber, XX. 173—his beam, 186.
- EECLOO, town in Belgium, VIII. 417.
- EEL, VIII. 417; XII. 230—angling for, III. 162—as an article of food, IX. 764—bobbing for, IV. 800—electrical, see Gymnotus—nine-eyed eel, XII. 228—effects of electricity on, VIII. 602—sand-eel, in Lapland, XIII. 242.
- EFFENDI, VIII. 417.
- EFFERVESCENCE, VIII. 417.
- Efficiency, of a machine, XIV. 404—of prime movers, 416.
- EFFIGY, VIII. 417.
- Effingham (Lord), V. 481.
- EFFLORESCENCE, VIII. 417; VII. 550.
- EFFLUVIUM, VIII. 417.
- Effodentia, tribe of mammalia, XIV. 190.
- Egalité, execution of, X. 83.
- Egbert, king of England, VIII. 656, 657.
- Egea, deposit of infusoria at, XVII. 94.
- Egede (Hans), Norwegian missionary, XI. 39.
- EGER, in Bohemia, VIII. 417.
- Swiss lake, XXI. 1010.
- Egeran, mineral, XV. 85.
- EGERIA, Ægeria, nymph, VIII. 418; XIX. 296.
- planet, IV. 91.
- Egerton (Sir P.), on fossil fishes, XVII. 116, 125, 126.
- Egg, VIII. 418—as an article of food, IX. 763—modes of preserving eggs, 767; XVIII. 815—artificial hatching of, 1b.—quantity imported from Honfleur, XI. 615—use of, in clarifying, VI. 755—serpent's egg of the Druids, VIII. 188; III. 167—eggs of insects, IX. 53—Hewitson's work on the eggs of British birds, XVI. 829—test of the freshness of, XVIII. 51—fossil eggs, XVII. 155. See Ova, Poultry.
- Egg-apples, V. 201.
- EGHAM, village in Surrey, VIII. 418.
- EGINHARD, VIII. 418. See Æginhard.
- EGANTINE, a plant, VIII. 418.
- Egmont (Count), XI. 563 *et seq.*
- EGNATIA, Italian city, VIII. 418.
- EGREMONT, in Cumberland, VIII. 418.
- EGRET, bird, VIII. 418; XVI. 799.
- EGYPT, VIII. 419; II. 224—physical geography, VIII. 419—chronology and history, 449—topography and monuments, 496—statistics, 515—Dolomieu on the physical constitution of, 95—pyramids of, II. 23; III. 437, 451, 457—singing and dancing girls, II. 600—Abdallatif's account of, 23—manufacture of sal-ammoniac, 721—management of bees, IV. 587—catacombs, VI. 330—cotton and wool manufacture, VII. 448—mining, 188—cotton-culture, 436—carpets, VI. 269—French trade with, X. 259—resemblances between ancient Egypt and India, V. 271—similarity of its monuments to those of Mexico, XIV. 720—Alexander's invasion of, XIII. 767—Bonaparte's expedition to, V. 564; X. 109, 119, 120; XV. 791; XXI. 371—Sir Ralph Abercromby's expedition, V. 583; X. 120; II. 29—British invasion in 1807, V. 603—monarchy of, XV. 413—information in the Bible regarding, XI. 368—hieroglyphical symbols of, 392—Dr Young on the monuments of, 404—coins of, XVI. 380—plague in, XVII. 748 *et seq.*; II. 22—Plato's visit to, XVII. 787—vessels of ancient, XX. 117

EGY—EIM

- conquered by Selim I., XXI. 369—its condition in the second century B.C., XIX. 312—Caesar's campaigns in, 326—reduced to a Roman province, 330—weights and measures, XXI. 810—map of, VIII. Plate. See Egyptians, Hieroglyphics, &c.
- Egyptian Institute, I. 947.
- thorn, II. 58.
- wheel, XII. 69.
- Egyptians, their skulls, III. 29—their veneration for the dog, 288; XI. 763; cat, XIV. 170; crocodile, VII. 506; ibis, XVI. 801—were ignorant of the arch, III. 401—their architecture, 400, 434, 457—army, 620—geographical discoveries in Asia, 752—astronomy, 782—versions of the Bible, IV. 700—religion, 217; VII. 711, 694; XI. 410; XII. 666—did they borrow their superstitions from India? V. 271; XIII. 194—their beer, 318—bricks, 342; XVIII. 520—calendar, VI. 76 *et seq.*, 670, 672; III. 783—castes, VI. 314—the Chinese not descended from, 557—practised circumcision, 732—used coffins, VII. 55—their mode of cooling water, 100—gnomons, 773—dyeing, VIII. 272—calico-printing, 314—divination, 54—embalming, 643—hieroglyphics, XI. 368; II. 606; V. 10—language, XI. 409, 412; XIII. 218—their treatment of the hair, XI. 182—funeral rites, X. 343—their knowledge of geometry, 497—glass-making, 657—irrigation, XII. 621—railway bridges, 609—the notion of their Indian origin, XIII. 194—their physiognomy, 218—locks, 533—libraries, 381—resemblance to the ancient Mexicans, XIV. 720, 721—their knowledge of medicine, 450—mysteries, XV. 752—mythology, 760, 764—navigation, XVI. 1—Osiris, XVII. 4—paintings, 46—paper, 246—papyrus, 262—their supposed resemblance to the Chinese, 354—exports of the precious metals to, XVIII. 468—sculpture, XIX. 848; VIII. 170—their version of the Scriptures, 839—acquaintance in ancient times with the power of steam, XX. 573—surgery, 809, 811—masonry, 710—ancient weights, XXI. 806—ancient wines of, 882—Egyptian dictionary, 965.
- Ehlite, mineral, XV. 104.
- Ehrard's burning mirrors, VI. 11.
- Ehrenberg, summary of his views of infusoria, III. 206, 208; XIII. 163—his arrangement of these animals, 211—on the brain and nerves, II. 808—on the brain, 820, 821—on the development of living organisms in the air, III. 210—on infusorial organic remains, XIV. 805; XVII. 94, 95—on a species of Medusa, XXI. 997—on polypes, 1002—on corals, 1004, *n.* 1.
- EHRENBREITSTEIN, in Rhenish Prussia, VIII. 518; VII. 46.
- Ehretiaceæ, nat. order of plants, V. 201.
- EIA, or Ey, VIII. 518.
- EICETÆ, sect of Syrian monks, VIII. 518.
- EICHORN (Johann Gottfried), VIII. 518—on the authorship of the Epistle to the Hebrews, XI. 277, 278—on the recension of the New Testament text, XIX. 836—on the book of Revelation, 99.
- EICHSTADT, town of Bavaria, VIII. 518.
- EIDER, or Eyder, river, VIII. 518—its connection with the canal of Kiel, VII. 748.
- EIDER-DUCK, VIII. 518; XVI. 817; XVII. 634—down of, VIII. 518—of Iceland, XII. 203.
- EIDOGRAPH, VIII. 518; VI. 119; XVII. 238.
- Eifel group of rocks, XV. 199.
- Eiffe's compensation-balance, VII. 30.
- EIGNE, VIII. 519.
- Eikon Basiliké, authorship of, X. 440; VIII. 263; XV. 26.
- EILAU-PREUSSISCH, Prussian town, VIII. 519.
- EILENBURG, town in Saxony, VIII. 519.
- Eilethias, remains of, VIII. 513.
- EIMBECK, or Einbeck, in Hanover, VIII. 519.

EIM—ELD

Eimeo, island, XVIII. 280.
 Einhoff, on the composition of barley-flour, V. 320.
 EINSIEDELN, town in Switzerland, VIII. 519; XIX. 733.
 EISENACH, in Germany, VIII. 519; XIX. 683.
 Eisenapattit, mineral, XV. 101.
 EISENBERG, in Germany, VIII. 519; XIX. 680.
 Eisennickelkies, XV. 116.
 EISENSTADT, in Hungary, VIII. 519.
 EISLEBEN, town in Saxony, VIII. 519.
 EISTEDDFOD, assemblies of Welsh bards, VIII. 520.
 EJECTMENT, in law, VIII. 520.
 EKATERINEBURG, in Asiatic Russia, VIII. 520.
 EKATERINOSLAV, or Yekaterenoslaff, in European Russia, VIII. 520; XIX. 521.
 EKRON, in Palestine, VIII. 520; XVII. 182, 514.
 El-Adid, king of Egypt, VIII. 479.
 Elaeagnaceæ, nat. order of plants, V. 205.
 Elæolite, mineral, XV. 73.
 ELÆOTHESIUM, VIII. 520; IV. 505; XI. 168.
 Elagabalus, Roman emperor, XIX. 347.
 ELAINE, VIII. 520; IX. 757; XVI. 492—one of the components of fat, II. 788.
 ELAM, VIII. 520.
 El-A'mir, king of Egypt, VIII. 479.
 Elanus, genus of birds, XVI. 743.
 ELAPHEBOLIA, Greek festival, VIII. 520.
 ELAPHEBOLION, the ninth Athenian month, VIII. 520.
 Elaphrus, genus of insects, IX. 98.
 ELAPS, genus of snakes, VIII. 520; XIX. 64.
 Elapsopsis, genus of fishes, XII. 233.
 Elasmodus, genus of fossil fishes, XII. 342; XVII. 119.
 Elasmotherium, fossil mammal, XVII. 173.
 ELASTICITY, VIII. 520—a property of all bodies, II. 100; XX. 749—of aeriform fluids, XI. 270—of heat, I. 767—of air, XVIII. 23, 30, 50, 53, 61—modulus of, I. 874; II. 101; in various woods and metals, VI. 251—of timber, XXI. 274, 275—motion of elastic fluids, XVIII. 68—Bernoulli's problem of the elastic curve, XX. 762; leading properties of that curve, ib.—elastic force of steam, 557—experiments on, ib., 558 *et seq.*
 ELATEA, town of Phocis, VIII. 520.
 Elater, genus of insects, IX. 106.
 Elaterides, family of insects, IX. 105—in Jamaica, XII. 682.
 Elaterite, XV. 124.
 ELATERIUM, in pharmacy, VIII. 521.
 Elaters, in the hepaticæ, V. 146.
 ELATH, city of Idumæa, VIII. 521. See Akabah.
 Elatinaceæ, nat. order of plants, V. 184.
 El-Azhar, Egyptian university, VIII. 487, 447.
 ELBA, VIII. 521—iron mines of, IX. 359; XXI. 393—tunny fishery, 394—Napoleon banished to, X. 169; XV. 795.
 ELBE, river, VIII. 521; X. 582, 585; XI. 211; IX. 384, 385; XVII. 605, 646; XVIII. 662; XIX. 684, 687—corn-trade of the, VII. 403.
 ELBERFELD, in Rhenish Prussia, VIII. 521.
 ELBEUF, French city, VIII. 522.
 ELBING, Prussian town, VIII. 522.
 Elbow-joint, III. 34.
 El-Burullus, Egyptian lake, VIII. 429.
 Elbuz, or Elbrouz mountains, XIII. 78; XVII. 592, 597, 599, 643.
 ELCESAITES, Jewish-Gnostic sect, VIII. 522.
 ELCHE, Spanish town, VIII. 522.
 ELCHINGEN, Bavarian village, VIII. 522—battle of, X. 137.
 Elcho (Lord), his registration bill, XVIII. 840.
 ELDER, Jewish, VIII. 522—of the primitive church, I. 487, 502, 512; XII. 371—in Presbyterian churches, XVIII. 480, 484.
 — tree, V. 195; XVII. 764—specific

ELD—ELE

gravity of the wood, XII. 89—cells of, V. 65.
 Elder (Randolf) and Co., their combined cylinder steam-engine, XX. 647.
 ELDORADO, VIII. 522.
 Eldred on gunnery, XI. 103.
 ELEATIC PHILOSOPHY, VIII. 522.
 ELEAZAR, eldest son of Aaron, VIII. 522.— son of Ananias, XII. 773.
 ELECAMPAÑE, plant, VIII. 522.
 Elecate, genus of fishes, XII. 297.
 ELECTION, VIII. 522—parliamentary, XVII. 296—bribery at elections, V. 342—in theology, XXI. 215.
 ELECTIVE AFFINITY, VIII. 522—franchise, X. 285, 738.
 Electric battery, VIII. 611; XXI. 99.— bells, VIII. 537, 550; IV. 630.— clocks, VII. 27; I. 986; XXI. 644.— current, XXI. 100 and *n.* 1—weak do., 632.— eel. See Gymnotus.— figures, VIII. 606.— jar, VIII. 611—construction and action of, ib.— kites, VIII. 608.— light, I. 924.— shock, VIII. 601; XXI. 609, 646—of fishes, XII. 133, 261.— spark, XXI. 610, 653.— TELEGRAPH, VIII. 627. See Telegraph.
 Electrical machines, VIII. 535, 536, 603— Van Marum's, 538—for medical purposes, 603—on the construction and use of, 605—Sir W. Snow Harris's, 604; Hare's, ib.; Walkiere de St Amand's, 605; Ingenhousz's, ib.
 ELECTRICITY, VIII. 523—history of, ib.; I. 660, 733—connection between it and magnetism, 800—phenomena and laws of, VIII. 535—on the electricity produced by heat, pressure, and separation of parts, 557; and by change of form, 565—changes produced by it on organic and inorganic bodies, 588—contributions of Æpinus to, II. 163—conduction and induction of, I. 978—observations of Gay-Lussac and Biot in a balloon, II. 182—Beccaria on, IV. 560—Canton's discoveries, VI. 201—Cavallio on, 345—animal electricity, I. 959, 960, 961, 988—Cavendish on, VI. 351—electrical theory of chemical attraction, 450—atmospheric, I. 962; XIV. 660—Coulomb's memoirs on, VII. 462, 463—Franklin's discoveries, X. 291—its effect on fermentation, V. 319, 329; on beer, 330—used to produce mechanical energy, XIV. 418—of fishes, XII. 133, 261; XVII. 671—of plants, V. 170—of minerals, XV. 59—quantity discharged during thunder-storms, XIV. 663—use of gutta percha in electrical experiments, XI. 163—mathematical theory of, I. 987—distribution of, ib., 988—its use in resuscitating drowned persons, VIII. 183—nervous power not identical with, XVII. 671—Priestley's history of, XVIII. 514—ordinary and voltaic electricity, difference of, XXI. 621—its influence on health little known, XIX. 608—its supposed agency in the Deluge, VII. 721—its influence in the formation of clouds and rain, 39—electrical action, in reference to electric telegraphs, XXI. 94—therapeutic effects of, 635—light and heat by means of, 637.
 ELECTRIDES, islands, VIII. 628.
 Electro-chemistry, Sir H. Davy's discoveries in, VII. 668 *et seq.*—on the chemical origin of galvanism, I. 964—chemical effects from the pile, 965—electrochemical theory, 968—electro-chemical decomposition, 978. See Voltaic Electricity.
 Electrograph, Ronald's, VIII. 626.
 Electro-magnetism, I. 973—discovered by Professor Oersted, VIII. 531, 600; I. 973; XXI. 638—details respecting its discovery, I. 973—Ampère's electro-dynamic theory, 974; XXI. 638—various opinions on the nature of the

ELE—ELE

electro-magnetic force, I. 974—mutual action of electric conductors, 975—electro-magnets, XIV. 74—influence of, in producing double refraction, XVI. 674; on the axis of crystals, ib.; I. 981—electro-magnetic rotations, 975, 977—as a prime mover, 987—Arago on, XXI. 638; fundamental experiments in, 638; rotations, ib.; inductions, 639—electro-magnetism as a mechanical power, 641.
 Electro-biology, XX. 441.
 Electro-dynamic machines, I. 987—Ampère's, XXI. 639; Marsh's improvement on, ib.
 Electro-gilding, X. 626; XXI. 637.
 Electro-motive force, conduction, and insulation, XXI. 94.
 ELECTRODE, VIII. 628; XXI. 95, 629.
 Electrometers, VIII. 616 *et seq.*; XXI. 97—Volta's condensing, VIII. 614—Bennet and Singer's, 617—Volta's straw, I. 962—Sir W. Snow Harris's, VIII. 620, 540—Faraday's instructions for using, 617—uses of, I. 738.
 Electromotors, XXI. 99.
 ELECTRON, VIII. 628.
 Electrophorus, VIII. 606; I. 961—Ingenhousz on the, XII. 380.
 Electrosopes, VIII. 616 *et seq.*—Hany's, 558—Bohnenberg's, XXI. 620—Sir W. Snow Harris's, VIII. 620.
 Electrotpe, XXI. 635—in nature printing, XVIII. 555—in bank-note printing, 557.
 ELECTROTYPIC, or electro-plating, VIII. 627; I. 987—trade in, at Birmingham, IV. 732.
 Electrum, XVI. 352; XIX. 843—coins of, 359, 375.
 ELECTUARY, in pharmacy, VIII. 628.
 Eledone, genus of mollusks, XV. 401.
 ELEEMOSYNA Carucarum, VIII. 628.
 ELEEMOSYNARIUS, VIII. 628.
 Elegance of style, XIX. 141, 142.
 Eleginus, genus of fishes, XII. 285.
 ELEGIT, in law, VIII. 628.
 ELEGY, VIII. 628—Roman elegiac poets, XVIII. 105.
 El-Elfee (Mohammad Bey), VIII. 489, 490, 492.
 ELEMENT, VIII. 628.— in physics and astronomy, VIII. 628; XII. 459—in chemistry, VI. 437—non-metallic elements, 455—in minerals, XV. 61—Hippocrates' theory of elements, XI. 533—elements of wine, XXI. 888.
 Elementary bodies, VI. 437—table of, 438.
 ELEMI, VIII. 628.
 ELENCHUS, VIII. 628.
 Eleotris, genus of fishes, XII. 307.
 ELEPHANT, VIII. 628; XIV. 195; XVII. 631—of Asia, III. 739—Africa, II. 217—Assam, III. 764—Ceylon, VI. 394—in India, XI. 454—Egypt, VIII. 432—Nepaul, XVI. 143—Sumatra, XX. 804—elephant-shooting, 211—longevity of, II. 234—trunk of, III. 100—ivory, 105; XII. 664—teeth, 105—dentition, 106; XVI. 473, 474—length of its intestines, III. 110—chemical composition of the tusk, XVI. 418—size of tusks, XII. 664—sea-elephant, XIV. 171—fossil, XVII. 168, 169, 606, 637, 638.— ORDER OF THE, in Denmark, VIII. 628.
 ELEPHANTA ISLE, VIII. 628; V. 1.
 ELEPHANTIASIS, a disease, VIII. 629; XIV. 443—in Ceylon, VI. 392—leprosy, sometimes so called, XIII. 340.
 ELEPHANTINE, island, VIII. 629, 514.— Books, VIII. 629.
 Elephas, genus of mammalia, XIV. 194—fossil, XVII. 168—*E. primigenius*, 169; XVII. 606, 610.
 ELEUSINIA, Greek festival, VIII. 629; XV. 753.
 Eleusinium, in ancient Athens, IV. 170.
 ELEUSIS, city of Attica, VIII. 630, 629; IV. 216, 217—coins of, XVI. 371.
 ELEUTHERIA, festival, VIII. 631.
 ELEUTHEROPOLIS, in Palestine, VIII. 631.
 Eleutherus, Syrian river, XX. 904.
 Elevation of the Host, VIII. 631.

ELE—ELL

Elevation, in architecture, III. 509.— of a place, the cause of cold, VII. 100.
 ELEVATOR MUSCLES, VIII. 631.
 ELEVATORY, surgical instrument, VIII. 631.
 ELEVE, VIII. 631.
 ELF, VIII. 631—elf-arrows, ib.—elf-candles, XIII. 457.
 El-Falz, king of Egypt, VIII. 479.
 Elfield, early printing at, XVIII. 532.
 Elfrida, VIII. 660.
 El-Geezeh, in Egypt, VIII. 499—pyramids of, 450.
 El-Ghooree, VIII. 487.
 ELGIN, Scotch town, VIII. 631; XV. 576, 577—cathedral, III. 482—reptilian remains in the sandstone of, XIX. 793.— MARBLES, VIII. 632; III. 708; XVII. 81, 508.— (Lord), on the timber trade of Canada, VI. 142—on the education tax in Canada, 157—his treaty with the Chinese in 1858, XXI. 265.
 ELGINSHIRE, VIII. 632. See Morayshire.
 Elgiva, VIII. 659.
 El-Hakim, king of Egypt, VIII. 478. See Hâkim.
 ELI, Jewish high priest, VIII. 632.
 Eliac sect of philosophers, XVII. 504.
 ELIAS LEVITA, Jewish grammarian, VIII. 632.
 ELIJAH, VIII. 633.
 Eliomichthys, genus of fossil fishes, XVII. 125.
 ELIOT (John), VIII. 633.— (Sir John), V. 393.
 ELIQUATION, in chemistry, VIII. 633.
 ELIS, or Eliea, VIII. 633, 634; XI. 13, 19—coins of, XVI. 372, 357.
 Elisa, or Dido, VIII. 16.
 ELISABETGRAD, in Southern Russia, VIII. 634.
 ELISABETPOL, in Georgia, VIII. 634.
 ELISHA, Jewish prophet, VIII. 634.
 ELISION, in grammar, VIII. 635.
 ELIXATION, in pharmacy, VIII. 635.
 ELIXIR, VIII. 635.
 ELIZABETH, queen of England, VIII. 635—reign of, 711—archery in her reign, III. 425, 427—restrictions on commerce, V. 382—her friendship for the Earl of Essex, VII. 761—her quarrel with him, 762—dramatists of the age of, VIII. 157—trial by battle, 231—her commitment to the Tower in Mary's reign, 709—death and character, 714—aid to Holland, XI. 569, 571—policy towards Ireland, XII. 477—her navy, XVI. 92—joint-stock companies in her reign, XII. 818—poetry in the age of, XVIII. 121—enactments regarding the poor, 301—anecdote of Raleigh and, 801—date of her death, 321, *n.*—Protestantism maintained by, 829—her policy towards Scotland and Queen Mary, XIX. 778 *et seq.*—state of the navy in the reign of, XX. 127—negotiations for her marriage with Eric of Sweden, 847—woollen manufacture in her reign, XXI. 915.— empress of Russia, XIX. 482.— (Port), on Algoa Bay, X. 714.
 ELIZABETHAN STYLE, in architecture, VIII. 637; III. 454.
 ELK, VIII. 637; XIV. 206; IX. 387—great fossil or Irish elk, XIV. 244; XVII. 170, 638—dentition of, XVI. 467.
 El-Kâmel, king of Egypt, VIII. 482.
 El-Karn, Egyptian lake, VIII. 429.
 El-Karnak, temple of, VIII. 507.
 El-Khuds, name of Jerusalem, XII. 734.
 Elkington's electro-plating establishment, IV. 732—his improvements in the art, XXI. 637.— system of draining, VIII. 133.
 ELL, a measure, VIII. 637.
 Eller (Dr), monster described by, XV. 503.
 ELLESMERE, in Shropshire, VIII. 637—aqueduct of, III. 338—canal, XX. 229.
 Ellet (Charles), on the Mississippi, XVI. 62, 63, 80, 81, 86.
 Ellice's islands, XVIII. 278.

ELL—ELS

ELICHPOOR, in Hindustan, VIII. 638.
 Elliot (Captain), chief commissioner to China, VI. 596—his proceedings there, 597.
 — (GEORGE AUGUSTUS), Lord Heathfield, VIII. 638—his defence of Gibraltar, X. 618.
 — (Sir Gilbert), I. 214, 215—his letter to Hume on causation, 287—his charges against Sir Elijah Impey, V. 529—his work on the improvement of Edinburgh, VII. 635—on the Alien Bill, V. 546.
 — (Hugh), V. 530.
 — (Prof.), his ocular stereoscope, XX. 685.
 Elliotson (Dr), on animal magnetism XX. 427, 431, 432.
 ELLIOTT (Ebenezer), the corn-law rhymist, VIII. 638.
 ELLIPSIS, or Ellipse, VIII. 639; X. 544, 553—mensuration of an, XIV. 517—instantaneous ellipse, I. 810—in masonry, XX. 725—various ways of describing, 726.
 — in grammar, VIII. 639.
 Ellipsoids, X. 558—attraction of, I. 823; IV. 230—ellipsoidal lenses, XVI. 574.
 ELLIPTIC, VIII. 639.
 — compasses, VII. 221.
 — functions, I. 822.
 — spheroids, IV. 221.
 — transcendents, IX. 679.
 — TURNING, VIII. 639.
 Ellipticity of the earth, I. 815, 854.
 ELLIPTOGRAPH, VIII. 639.
 Ellis on Dunbar's poetry, VIII. 247—on Gower's poetry, X. 740.
 — (Leslie), on Abel's mathematical discoveries, I. 822—his report on mathematics, 804, n. 1—on Laplace's doctrine of probabilities, 820—on chemical forces, 936, n. 1—his biography of Duncan Gregory, 807, n. 2.
 — (Mr), his observations on animalcules and mucor, III. 204—on the cochineal insect, VIII. 283.
 Ellman (John), his improvement of South Downs, II. 346.
 ELLORE, in Hindustan, VIII. 640.
 ELLRICH, in Saxony, VIII. 640.
 Ellwood (Thomas), his intercourse with Milton, XV. 31—imprisonment of, XVIII. 719.
 ELM, VIII. 640; XVII. 758, 764—timber, XX. 167; XXI. 274—rock-elm, 276—specific gravity of the wood, XII. 89; strength of, XX. 757, 758.
 — order of plants, V. 206.
 ELMACINUS (George), VIII. 640.
 El-Mansoorah, in Egypt, VIII. 497.
 El-Menzeleh, lake, VIII. 429.
 El-Mo'izz, VIII. 477.
 El-Mustansir, king of Egypt, VIII. 478.
 ELMINA, African town, VIII. 640.
 Elnis, genus of insects, IX. 116.
 Elmo (St), fire of, VIII. 588; XIV. 470.
 — castle of, XV. 780.
 ELSLEY (Peter), VIII. 640.
 Elocution. See Declamation.
 Elodes, genus of insects, IX. 107.
 Eloge, IX. 374—Cuvier's eloges, VII. 605.
 ELOGY, or Eulogy, VIII. 640.
 ELOHIM, VIII. 640; XXI. 188.
 ELOIGNED, or Eloined, in law, VIII. 640.
 ELONGATION, in astronomy, VIII. 640.
 Elopidae, family of fishes, XII. 251.
 Elops, genus of fishes, XII. 251.
 Eloquence of the Druids, VIII. 189. See Rhetoric.
 ELORA, town in Hindustan, VIII. 640.
 — temple of, VII. 716.
 ELPHIN, in Ireland, VIII. 641; XIX. 420.
 Elphinstone (Hon. Mountstuart), his account of Afghanistan, II. 201—on the Punjab, XVIII. 687, 688—on the Himalayas, XI. 448—on the great desert of Hindustan, 449—on the Indian monsoon, 451—on Indian land-tax, XXI. 45 and n. 2.
 — (WILLIAM), Scotch bishop, VIII. 641; XXI. 478—his Breviary, XIII. 400, n. 5.
 ELSINORE, or Elsinour, VIII. 641.

ELT—EMM

ELTHAM, in Kent, VIII. 641.
 Elvanite, rock, XV. 134, 135, 187, 187.
 ELVAS, in Portugal, VIII. 641.
 El-Uksur, VIII. 506. See Uksur.
 ELUTRIATION, VIII. 641.
 Elwood (Mrs), on Cutch, VII. 597.
 ELY, in Cambridgeshire, VIII. 641.
 — cathedral of, VI. 115.
 — Isle of, VI. 114—eels from, III. 162, n.
 Elymais, VIII. 520.
 Elymas, king of Libya, VI. 285.
 Elymus arenarius, plant, VIII. 645.
 ELYSIUM, VIII. 642.
 ELYTRA, wing-sheaths of beetles, VIII. 642; IX. 40.
 ELZEVIUS, printers, VIII. 642.
 — their New Testament, IV. 698; XIX. 837.
 EMANATION, VIII. 642.
 — of radiant heat, I. 944, 947.
 EMANCIPATION, in Roman law, VIII. 642.
 — of negro slaves, XX. 324.
 EMATHIA, VIII. 642.
 EMAUM GHUR, in Scinde, VIII. 642.
 EMBALMING, VIII. 643.
 — by the Guanches, VI. 163.
 EMBANKMENT, VIII. 643; VII. 323, 324; XIX. 213—effect of, on the navigation of tidal rivers, XVI. 86—embankments on railways, XVIII. 759.
 EMBARGO, in commerce, VIII. 647.
 EMBASSY, VIII. 647; II. 652. See Diplomacy.
 EMBATTLED, VIII. 647.
 EMBDEN, or Emden, in Hanover, VIII. 647; XI. 212—presbyterian church at, XVIII. 486.
 EMBER-WEEKS, VIII. 647.
 Emberiza, genus of birds, XVI. 760.
 EMBLAZONING, VIII. 647. See Blazonry and Heraldry.
 EMBLEM, VIII. 647.
 EMBOLISM, VIII. 648.
 Embolite, mineral, XV. 107.
 EMBOSSEING, VIII. 648.
 EMBRASURE, in architecture, VIII. 648— in fortification, IX. 807.
 Embrithite, mineral, XV. 119.
 EMBROCATION, VIII. 648.
 EMBROIDERY, VIII. 648—in Glasgow, X. 650—in Greece, XI. 17—imports of, VIII. 734—of Sindh, XX. 304.
 EMBRUN, in France, VIII. 648.
 EMBRYO, in physiology, VIII. 648; XVII. 684 et seq.
 — in plants, V. 140, 155, 157, 158.
 EMERALD, VIII. 648; IV. 682, 683; XV. 88; XVII. 623—comparative analysis of emerald and beryl, IV. 683—dichroism in, XVI. 666—specific gravity of, XII. 88. See Beryl.
 — copper, XV. 102.
 — type, XXI. 401.
 EMERITUS, VIII. 649.
 EMERSON, VIII. 649.
 Emerson, on mechanics, XX. 716, 718—on the strength of timber, &c., 758.
 — (WILLIAM), VIII. 649; I. 713 and n. 5—rule for ordinates given by, XX. 142.
 — (Dr), on the mortality at Philadelphia, XV. 609.
 EMERY, VIII. 649; XV. 87—of Naros, XI. 14.
 Emerylite, mineral, XV. 79.
 EMETIC, VIII. 649; XVIII. 133.
 Emeu. See Emu.
 EMIGRATION, VIII. 649—from Ireland, XII. 502—to Canada, in 1852-53, VI. 153—Scottish, to Cape of Good Hope, X. 712—New Zealand as a field for, XVI. 235—the United States, XXI. 422, 432 et seq.; XVIII. 339—annual, from United Kingdom, VI. 154—its insufficiency to keep down population, XVIII. 343—encouragement of, XXI. 677.
 EMINENCE, VIII. 652.
 EMIR, VIII. 652, 199; III. 350—rule of emirs in Spain, XX. 461.
 Emly, in Tipperary, XXI. 287.
 Emma, wife of Canute, VIII. 662.
 EMMANUEL, VIII. 652.

EMM—ENC

Emmanuel (Victor), king of Sardinia, XII. 658—his aid to the British and French in the late Russian war, XIX. 507—his reign, 642.
 — king of Portugal, XVII. 4.
 — College, Cambridge, XXI. 466.
 Emmelichthys, genus of fishes, XII. 213, 287, 288.
 EMMERICH, in Rhenish Prussia, VIII. 652.
 Emmett (Robert), V. 624; VIII. 218; XII. 500.
 EMMIUS (Abbo), VIII. 652.
 Emory (Major), his account of New Mexico, XIV. 729.
 Emotional theories on the foundation of moral rectitude, XV. 543.
 Emotions, or passions, XIV. 578. See Moral Philosophy.
 EMPALEMENT, a punishment, VIII. 652.
 EMPEDOCLES, VIII. 652—on the soul of animals, III. 309—taught the true theory of the moon's light, I. 568.
 EMPEROR, VIII. 653.
 — of Japan, fish, XII. 301.
 Empetraceae, nat. order of plants, V. 205.
 EMPHYSEMA, VIII. 653.
 Empididae, family of insects, IX. 235.
 EMPIRE, VIII. 653—German, ib.—empires in Europe, IX. 397.
 EMPIRIC, VIII. 653.
 Empis, genus of insects, IX. 236.
 Employés on railways, XVIII. 785.
 EMPORIUM, VIII. 653.
 EMPSON (William), VIII. 653—on the English government and laws, 756—on law, XIII. 270.
 Empusa, genus of insects, IX. 157.
 EMPYEMA, a disease, VIII. 653.
 EMPYREUM or Emphyrean, VIII. 653.
 EMPYREUMA, in chemistry, VIII. 653.
 EMS, in Nassau, VIII. 653.
 — river, VIII. 653; XI. 211; XVIII. 662.
 EMU, or Emeu, VIII. 653; VI. 261; XVI. 796; XVII. 634; XXI. 31.
 Emy (Colonel), roofs constructed by, XXI. 394, 395.
 Emys, tortoise, XIX. 17—fossil, XVII. 153.
 ENALIOSAURIA, fossil reptiles, VIII. 653; XVII. 143, 640—geological distribution of, 154.
 ENAMEL, VIII. 653—of the teeth, II. 830; III. 105; XVI. 407, 410—painting in, VIII. 654—improved by Petitot, XVII. 494—photography on enamelled glass and metals, 551.
 ENAMELLING, VIII. 654—of Delft-ware, VII. 705—of leather, XIII. 310—of pottery and porcelain, XVIII. 444.
 Enargite, mineral, XV. 119.
 ENCAUSTIC and ENCAUSTUM, VIII. 654.
 — PAINTING, VIII. 654—among the Greeks, XVII. 51.
 ENCEINTE, in fortification, VIII. 654.
 Enceladus, genus of insects, IX. 85.
 Encephalous mollusks, XV. 355, 322.
 ENCHANTMENT, VIII. 654. See Divination, Magic, Witchcraft.
 ENCHASING, or chasing, VIII. 654.
 Enchellophus, genus of fishes, XII. 268.
 Enchelis, genus of animalcules, III. 200.
 Enchelycore, genus of fishes, XII. 231.
 Enchelynassa, genus of fishes, XII. 231, 225.
 Enchelyopus, genus of fossil fishes, XII. 347.
 Enchodus, genus of fossil fishes, XII. 345.
 ENCHORIAL CHARACTERS, VIII. 654; XI. 371, 372, 403. See Demotic.
 Encina (Juan de la), X. 623.
 Encke (Johann Franz), I. 855—his eminence in cometary astronomy, ib.—his astronomical labours at the Berlin Observatory, III. 819—on the perturbation of the small planets, IV. 91; I. 858—his researches on the comet of 1819, 857—attributed its accelerated motion to a resisting medium, ib.—this theory questioned, ib.—his comet, 856; IV. 76, 94.
 Encoubert, in zoology, XIV. 191.
 Encrinites, XVII. 98, 99.
 Encrinus, XXI. 994.

ENC—ENG

Encumbered Estates Bill, V. 671; XVII. 365—court plans of, XXI. 334.
 ENCYCLOPÆDIA, VIII. 654; VII. 607—Alfarabius probably the first compiler of an, II. 477—Chinese, VI. 577. See Preface to the ENCYCLOPÆDIA BRITANNICA.
 — Britannica, VII. 299; see Preface to the—value of presentation copies, and paper duty, of the last edition, 357, n. 2—stereotyping of, XVIII. 550—contributions to, by Dr Barclay, IV. 443; Dr Doig, VIII. 91; Thomas Galloway, X. 387; Bishop Gleig, 677; Hazlitt, XI. 259; Haydon, 252; Leslie, XIII. 345, 346; Mill, XV. 12; Milne, 600, n.; Playfair, XVIII. 5, 6, n. 1; IV. 96, n.; Robison, XIX. 239; I. 870, 871, 872, 930, n. 2; XX. 18; Dr Thomas Young, I. 874, 900; VI. 378, 369; XXI. 964; Professor Wallace, 687; James Wilson, XII. 331, n.; XXI. 876; Spalding, XX. 496; Robert Stephenson, 683; Dr Thomas Thomson, XXI. 236; P. F. Tytler, 415—former editors of, XIX. 239; Macvey Napier, XV. 778; Dr James Browne, sub-editor, V. 686—Smellie's connection with, XX. 336.
 — Edinburgh, Telford's contributions to, XXI. 146; Dr Andrew Thomson's, 232.
 Encyclopædical tree, D'Alembert's, I. 1.
 Encyclopædists, X. 47.
 Encyclopedie (French), D'Alembert's contributions to, II. 462.
 ENDEMIC diseases, VIII. 654.
 Endive, V. 197—culture of, XI. 743.
 Endocarp, in botany, V. 135.
 Endoceras, fossil mollusks, XVII. 112.
 Endœus, Greek sculptor, XIX. 852.
 ENDOGENS, one of the primary classes of plants, VIII. 655; V. 80, 83, 179.
 Endomachus, genus of insects, IX. 151.
 Endopleura, in botany, V. 139.
 ENDOR, town in Galilee, VIII. 655—witch of, III. 321.
 Endorse, in heraldry, XI. 327.
 Endosmose, XII. 101, 102; V. 86.
 Endosperm, in botany, V. 139.
 Endospores, in botany, V. 142.
 Endothecium, in botany, V. 126.
 Endowments, in the church, I. 542—Scotch Established Church, XVIII. 494.
 ENDYMION, VIII. 655.
 Energetics, applied, XIV. 416.
 Energy, in mechanics, XIV. 403, 404, 411—sources of, 416—stored and restored, 408—distributed between two bodies, 413—transformation of, 418—all forms of, convertible, XX. 618.
 Enfantin, communist, VII. 211.
 ENFIELD (William), LL.D., VIII. 655.
 — village in Middlesex, VIII. 655.
 — rifled musket, XI. 101.
 — Lock, manufacture of fire-arms at, XXI. 695.
 ENFILADE, in the military art, VIII. 655; IX. 801.
 ENGADINE, Swiss valley, VIII. 655.
 ENGASTRIMYTHI, VIII. 655.
 ENGHIEU, town of Belgium, VIII. 655.
 — (Duc d'), VIII. 655—execution of, X. 129; XV. 794.
 ENGINEER, VIII. 655—institution of civil engineers, III. 506—French corps of, 641—Austrian, 645—British, 666. See Army—naval, XVI. 104—log of, in steam-vessels, XX. 656.
 Engineering (Civil), I. 865; VIII. 655—its relation to physics, I. 865—application of statical principles to, 870—taught in Durham University, XXI. 472; and in Trinity College, Dublin, 489.
 Engitides, tribe of insects, IX. 114.
 ENGLAND, VIII. 656—history of, ib.—statistics, 715—agriculture, II. 253 et seq.—expeditions against Algiers, 569 et seq.—American colonies, 700, 703, 707, 708—archery, III. 424 et seq.—pointed architecture, 448, 480—later architecture, 454—recent pointed architecture, 456—Saxon and Anglo-Norman architecture, 480—weights and measures, 584—army.

ENG—ENG

862—gunpowder, 683—artillery, *ib.*—
painters, 712—baking, IV. 378—bell-
ringing, 629—brewing, 321—canals, 367
—union of its crown with that of Scot-
land, 381—history after that union, *ib.*
—union with Scotland, 449; XXI. 418
—attempt to dissolve that union, V.
452—castles in former times, VI. 326—
influence of the wars of the Roses
on chivalry, 625—coinage and the
mint, VII. 68—commerce, 189—naviga-
tion laws, 145, 189—mercantile system,
192; losses from that system, 193—
Lord High Constable of, 299—corn
laws and trade, 374—influence of the
cottage system, 433—effects of the
cotton manufacture, 438; history of
that manufacture, 440—cutlery of, 600
—war with Denmark, 742—condition
of, during the Crusades, 528—law of
divorce, VIII. 68—dock-yards, 78—
drama, 143, 146, 156—duelling, 231—
title of Duke, 234—fisheries, IX. 643—
law regarding fishing on the sea-coast,
602—hunting, XII. 33 *et seq.*—glass-
making, X. 659—language, XIII. 211—
law of libel, 357—lunatic asylums, XIV.
538—visit of Louis Philippe to, in 1845,
X. 222—exportations from, and import-
ations into, France from England, 261
—friendly societies in, 310—leprosy,
XIII. 340—royal arms of, XI. 322—his-
torical writers, 548—horses, 633 *et seq.*
—horsemanship, 673—insurance offices
in, XII. 406—condition of the Jews in,
779, 782, 783—triassic rocks in, XV.
206—oolitic or jurassic, 206, 207, 208—
cretaceous, 209—coal, 203; VII. 116
et seq., 127—religious missions to foreign
countries, XV. 270; sum of money ex-
pended on, 272—banking, 453—money,
435, 436, 438, 439; XVI. 388—mysti-
cism in, XV. 758—system of education
in, 823—vital statistics of, 649—oaths
in, XVI. 399—proportion of insane,
XIV. 536—navy, XVI. 89—newspapers,
180—history of art in, XVII. 77 and
n. 1—history of the parliament of, 288
—franchise in, 293—classical learning
in sixteenth century, 523—its philology
compared with that of Germany, 525—
heights of mountains in, 643—poetry,
XVIII. 120—North-west voyages under-
taken by, 166—police of, 191—poor laws
of, 299 *et seq.*—increase of population,
341—expectation of life, 342—post-
office, 403 *et seq.*—pottery, 433—porce-
lain, 437—Presbyterianism, 488—pri-
sons, 567—introduction of printing, 534
—railways, 752; extent of, 784—the
Reformation, 828; VII. 483—roads,
XIX. 225—romance, 267—royal family,
456—sculpture, 865—sanitary measures,
603—ship-building, XX. 119 *et seq.*—
surgery, 818—silk-manufacture, 276;
rearing of silk-worms, 292—slavery,
320—suicides, 800—quantity of spirits
charged with consumption duties in,
XXI. 74—early history of the tea-trade
in, 89—land-taxes in, 45—timber, 268
et seq.—sheep and wool, 906 *et seq.*—
universities, 452—woollen manufactures,
913—defences of, 701—map of, VIII.
Plate. See Chronological Table, VI.
681 *et seq.*; also Britain, Scotland.
ENGLAND, CHURCH OF, VIII. 792, 744—
ordination in, XVI. 703. See Episco-
pacy, Bishop, Benefice, &c.
Engledue (Dr W. C.) on phreno-mesmer-
ism, XX. 440.
Englefield (Sir H.), his portable baro-
meter, IV. 466—his filter, IX. 581—on
heat, XI. 263—on the spectrum, XVI.
592.
Engleherdt, on the level of the Caspian
Sea, VI. 311.
ENGLISH CHANNEL, VIII. 792—analysis of
the water of, XIX. 585.
—arc of meridian, I. 837.
—blue, in dyeing, VIII. 304.
—LANGUAGE, VIII. 793; XIII. 211—
its superiority to the French as an in-
strument of thought, I. 229, n. 2—spe-

ENG—ENT

cimen of a dictionary of, VIII. 9—
Bibles, IV. 702.
English type, XXI. 401, 403.
Englishmen, their tendency to dread a
French invasion, V. 552—distinguished
as sportsmen, XX. 211.
ENGOULEE, in heraldry, VIII. 813.
ENGRAFTING, in gardening, VIII. 798.
See Grafting.
ENGRAILED, in heraldry, VIII. 789; XI.
326.
Engramelle (M. D. J.), his work on in-
sects, IX. 6.
Engraulis, genus of fishes, XII. 237—
fossil, 347.
ENGRAVING, VIII. 799—on gems, 813—
aquatinta, III. 331—of dies, VII. 94—
on glass, VIII. 813—steel, *ib.*—mezzo-
tinto, XIV. 733; XIX. 465—Blond's
coloured engravings, IV. 788—of gun-
furniture, XI. 101—on stone, XIII. 511
—use of the dry needle in, XX. 746—
multiplication of engraved copperplates
by voltaic electricity, XXI. 636—wood
engraving, 902—of the maps of the
trigonometrical survey, 336.
ENGRAINED, in dyeing, VIII. 813.
Engrossing of corn, statutes against, VII.
375.
ENGUERA, Spanish town, VIII. 813.
Enguri. See Angora.
ENHARMONIC, VIII. 813. See Music.
Enhydra, sea-otter, XIV. 159—dentition
of, XVI. 461.
Enicocerus, genus of insects, IX. 116.
Enicurus, genus of birds, XVI. 752.
ENIGMA, VIII. 813. See Enigma.
ENIPEUS, river, VIII. 813.
ENKHUYZEN, in Holland, VIII. 813.
ENLISTMENT, VIII. 813—Mr Windham's
act respecting, V. 599.
ENMANCHE, in heraldry, VIII. 814.
En-Nasir, king of Egypt, VIII. 484, 485.
Enneacrunos, fountain, IV. 170.
ENNEAGON, in geometry, VIII. 814.
ENNEATICAL, VIII. 814.
ENNIS, in Ireland, VIII. 814; VI. 754.
ENNISCORTHY, in Ireland, VIII. 814; XXI.
848.
ENNISKILLEN, in Ireland, VIII. 814; IX.
516.
ENNISTYMON, in Ireland, VIII. 814.
ENNIVS (Q.), Roman poet, VIII. 814;
XIX. 313—poetry of, XVIII. 104—on
echini, as food, XXI. 990.
ENOCH, VIII. 815; I. 454.
Enontekis, climate of, XIII. 237.
Enoplocytia, fossil lobsters, XVII. 102.
Enoplosus, genus of fishes, XII. 275—fossil,
343.
Enoplotenthis, genus of mollusks, XV. 399.
Enos, in European Turkey, VIII. 815.
ENS, in Metaphysics, VIII. 815.
—Austrian city, VIII. 815.
—river, VIII. 815; IV. 309, 312.
ENSEELED, in falconry, VIII. 815.
ENSHAM, in Oxford, VIII. 815.
Ensiform cartilage, III. 9.
ENSIGN, VIII. 815; VII. 202—naval, VIII.
815.
Ensisheim, meteoric stone of, XIV. 629.
ENT (Sir George), VIII. 815.
ENTABLATURE, VIII. 815; III. 509—Doric,
464, 476, 477—Ionic, 465, 475, 477—
Corinthian, 467, 474, 477—Caryatic, 477.
ENTAIL, VIII. 815—abolition of, in the
Ionian islands, XII. 448.
Entalophora, fossils, XVII. 98.
Entasis, in architecture, III. 509.
Entelmintha, XXI. 974.
Enterion, genus of annelides, XI. 301.
Entomoconchus, fossils, XVII. 101.
ENTOMOLOGY, IX. 1—the study defended
against the charge of cruelty, III. 177
—use of flies in angling, 147 *et seq.*—
tenacity of life in insects, 176—their
insensibility to pain, 177—eyes of in-
sects, 98—Fabricius on, IX. 465—La-
treille, XIII. 248—Moufet, XV. 666—
Kirby and Spence's introduction to,
XIII. 96; XX. 504—distribution of in-
sects, XVII. 636—kinds injurious in
gardens, XI. 758, n.—how some can

ENT—EPI

walk on water, XX. 753—method of
destroying noxious kinds, XXI. 549.
Entomostraca, crustacea, VII. 543—their
nervous system, 538—their organs of
reproduction, 539—fossil, XVII. 101.
ENTOZOA, IX. 266; III. 192, 193; XXI.
974. See Intestinal Worms.
ENTRE DUERO E MINHO, IX. 266; XVIII.
395.
Entre Rios, in La Plata, XVII. 779.
Entrecasteaux. See D'Entrecasteaux.
ENTREPOT, in commerce, IX. 266.
ENTRESOL, in architecture, IX. 266.
Entrophic organs, III. 58, 105.
ENTRY, in law, IX. 266—in book-keeping,
V. 28, 29.
ENUMERATION, IX. 266—enumerations of
the people, XV. 625.
Envallson (Carl), Swedish dramatist, XIX.
699.
ENVELOPE, in fortification, IX. 266.
Envelopes of flowers, V. 122, 123.
—for letters, XXI. 68.
ENVOY, IX. 266. See Ambassador.
ENYED NAGY, in Transylvania, IX. 266.
ENZELLI, Persian town, IX. 266.
Eoa, XI. 387.
EOCENE PERIOD, in geology, IX. 266; XV.
211—flora of, V. 237—corals, XVII. 97.
EOLIPILE. See Æolipile.
Eolis, genus of mollusks, XV. 356, 357,
369.
Eolophone, musical instrument, XI. 230.
EOOA, island, IX. 266.
EORA, Athenian festival, IX. 266.
Eos. See Aurora.
EOSTRE, Saxon goddess, IX. 266.
Epacridaceæ, nat. order of plants, V. 198
—region of, 229; XVII. 629.
EPACT, in chronology, IX. 266; VI. 83—
tables of, 84, 85.
EPAMINONDAS, Theban general, IX. 266;
XXI. 177—his army, III. 628—anecdote
of, IX. 578—degraded, XXI. 178—un-
successful attempt on Sparta, *ib.*—
death of, 179.
EPAULEMENT, in fortification, IX. 266.
EPAULETTE, IX. 267.
Epée (Abbé de l'), on the education of the
deaf and dumb, VII. 674, 677, 680.
Epeira, genus of arachnides, III. 381.
EPENTHESIS, in grammar, IX. 267.
Epeolus, genus of insects, IX. 200.
EPERIES, town in Hungary, IX. 267—
butcheries of, XII. 22.
EPERNAY, French town, IX. 267—wines of,
XXI. 883.
EPEUNACTÆ, IX. 267.
EPHAB, a Jewish measure, IX. 267.
EPHEBEUM, IX. 267; XI. 168.
EPHEBI, IX. 267.
EPHEMERA, IX. 267.
—insects, IX. 177; III. 149.
EPHEMERIS, IX. 267; III. 815; IV. 74;
XIII. 687.
EPHESIANS, Epistle to the, IX. 267.
EPHESUS, IX. 267—church of, XVIII. 481
—coins of, XVI. 376.
EPHETÆ, Athenian judges, IX. 269.
Ephialtes, genus of insects, IX. 190; XX.
500.
Epibulus, genus of fishes, XII. 265, 267.
Ephippus, genus of fishes, XII. 302—fossil,
344.
EPHOD, in Jewish antiquity, IX. 269.
EPHORI, Doric magistrates, IX. 269; XX.
502.
EPHORUS, Greek historian, IX. 270.
EPHRAEM SYRUS, IX. 270.
EPHRAIM, IX. 271.
EPHYDOR, Athenian officer, IX. 271.
Ephydra, genus of insects, IX. 256.
EPI, a Greek prefix, IX. 271.
EPIBATÆ, IX. 271.
Epic poem, IX. 271; XVIII. 99.
Epicalyx, in botany, V. 123.
Epicarides, crustacea, VII. 542.
Epicarp, in botany, V. 135.
EPICEDION, IX. 271.
EPICENE, in grammar, IX. 271.
Epicharis, genus of insects, IX. 200.
EPICHRMUS, Greek poet, IX. 271.
EPICHEBOTONIA, IX. 272.

EPI—EPI

Epichlorite, mineral, XV. 78.
EPICLERUS, IX. 272.
EPICTETUS, Stoic philosopher, IX. 272;
XIV. 454.
EPICUREAN PHILOSOPHY, IX. 272; XV.
552; I. 318—Bacon's admiration of
Epicurean physics, 71—Gassendi's par-
tiality for, *ib.*
EPICURUS, IX. 273—character of, I. 319—
respect paid to his system by his fol-
lowers, 321—his definition of motion,
566—his notion of vision, 621—ma-
terialism, III. 308 and n.—Canonica,
VI. 191.
EPICYCLE, IX. 274—system of, IV. 53.
EPICYCLOID, in geometry, IX. 274; VII.
269—epicycloidal teeth for wheels, XIV.
395.
Epicyrus, genus of fishes, XII. 246.
EPIDAMNUS, city of Illyricum, IX. 274;
IV. 202.
EPIDAUROS, Greek city, IX. 274—serpents
of, XIX. 56.
EPIDEMIC, IX. 275; VIII. 655—insanity,
XIV. 527—fevers, IX. 526—diseases
among silkworms, XX. 292, 293—
Sydenham on epidemics, 894.
Epidermis of skin, II. 834; XIII. 302—of
the mucous membrane, II. 836—of
plants, V. 74.
EPIDICASIA, IX. 275.
Epidii, Caledonian tribe, VI. 74.
Epidote, mineral, XV. 85—rock, 135.
Epiglottis, in man, III. 50—in the lower
animals, 101.
EPIGONI, IX. 275.
EPIGRAM, in poetry, IX. 275; XIV. 320.
Epigynous stamens and petals, V. 127,
179.
EPILEPSY, IX. 275; XIV. 436; XVII.
700—with insanity, 535—in the horse,
XXI. 574.
Epilobium, plant, V. 192.
EPILOGUE, IX. 276.
Epimachus, genus of birds, XVI. 771.
EPIMENIDES, the Cretan, IX. 276.
EPIMETHEUS, IX. 276; XVIII. 640.
EPINAL, French town, IX. 276; XXI. 672.
Epinay (Madame d'), her account of David
Hume in Paris, XII. 4, n. 2.
Epiphanes, XI. 391.
EPIPHANIUS (St), IX. 276—on the Ebion-
ites, VIII. 369.
EPIPHANY, Christian festival, IX. 276.
Epiphloeum, in plants, V. 82.
Epiphragm, in mosses, V. 145.
EPIPHYTES, plants growing upon other
plants, IX. 276; V. 221, 77, 101.
EPIRUS, in Greece, IX. 277—monarchy of,
XV. 413—coins of, XVI. 370.
EPISCOPACY, IX. 278—favoured by James
I., V. 383—his design to establish it in
Scotland, *ib.*—attempt of Charles I. to
set it up in Scotland, 394—violent at-
tempts of Charles II. to introduce it
into Scotland, 428—its difference from
Presbyterianism, XVIII. 480—rise of,
482—no scriptural warrant for, accord-
ing to Presbyterians, 481—its alleged
succession from the apostles, 482—
abolished in England in 1642, 489—
supposed possibility of its union with
the Greek Church, XI. 35—James VI.'s
plan for introducing into Scotland, XIX.
789.
Episcopalianism, IX. 394—their places of
worship in Scotland, XIX. 801—severe
treatment of, in Scotland, after the re-
bellion of 1745, XX. 815.
EPISCOPIUS (Simon), Armenian divine, IX.
282.
Episinus, genus of arachnides, III. 380.
EPISODE, in poetry, IX. 282.
Episperm, in botany, V. 139.
Epistilbite, mineral, XV. 76.
EPISTLES AND GOSPELS, XV. 282.
Epistropheus, vertebra, III. 5.
Epistylum, or Epistile, in architecture,
III. 509.
EPITAPH, IX. 282.
EPITHALMIUM, IX. 283.
Epithelium of plants, V. 74.
Epitragus, genus of insects, IX. 132.

EPI—ERA

Epizoa, XXI. 981.
 EPOCH, in chronology, IX. 283; VI. 664—difference between æra and epoch, II. 165—in geology, XV. 195, 196 *et seq.*
 EPODE, in lyric poetry, IX. 283.
 EPPING, town in Essex, IX. 283—forest, 336—dairies, 337.
 Eproboscidae, division of insects, IX. 258.
 ERROUVETTE, IX. 283; XI. 157.
 EPSOM, town in Surrey, IX. 283.
 Epsomite, or Epsom-salt, XV. 99—Epsom Salts Cave, in Indiana, XII. 375.
 ERULONES, Roman priests, IX. 283.
 Equation of time, IV. 23—table of, for converting mean time into apparent time, 133—table of, for every day of the year, VII. 797—tables of, for the times of new and full moon, IV. 122–126.
 ——— clocks, VII. 15.
 ——— in astronomy, IV. 103.
 EQUATIONS, IX. 284—homogeneous, I. 645, *n.*—absolute, II. 50—in algebra, 502 *et seq.*—quadratic, 510—certain general properties of, 513—cubic, 516—biquadratic, 520—reciprocal, 522—resolution of those whose roots are rational, 524—resolution of, by approximation, 526—loci of, 544—differential, IX. 741—determination of the equations to curves, X. 543; of the forms and properties of curves from their equations, 545, 551—equations to surfaces of the second degree deduced from their properties, 558—Sturm's theorem in, XX. 784.
 EQUATOR, IX. 316; XVI. 7—astronomical, IV. 2—geographical, X. 480—magnetic, I. 991; XIV. 57; XVII. 617.
 EQUATORIAL, IX. 316—currents, XIV. 652; XVII. 577, 579.
 ——— instrument, IX. 316; IV. 154.
 ——— mounting of telescopes, XXI. 144.
 EQUERRY, IX. 316; XI. 776.
 EQUES, genus of fishes, XII. 285.
 EQUES AURATUS, IX. 316; XIII. 112.
 EQUESTRIAN, IX. 316.
 EQUIANGULAR, IX. 316.
 EQUIDISTANT, IX. 316.
 EQUILATERAL, IX. 316.
 EQUILIBRIUM, IX. 316—in mechanics, XIV. 380—of the human body, III. 41—of fluids, XII. 78—of forces, VIII. 340—of arches, III. 416; V. 351; XII. 586—of roofs, XIX. 378, 379—theory of the tides, I. 816—of a ship, XX. 13, 152—of two pressures, 538—of three pressures, 540—of four, 541—several, 542—parallel, 544—general condition of, 548. See Arch, Balance, Statics.
 EQUIMULTIPLE, IX. 317.
 EQUINOCTIAL, IX. 317—points, *ib.*; IV. 12—dial, 317; VII. 779—current, IV. 176—line, X. 480.
 EQUINOX, IX. 317; IV. 14—Chinese ceremonies at, VI. 568. See Precession of the Equinoxes.
 EQUIPOLLENCE, in logic, IX. 317.
 EQUIRIA, Roman festival, IX. 317.
 Equisetaceæ, nat. order of plants, V. 216—reproductive organs of, 143—spores or cells of, 66, 68.
 Equitable Life Assurance Society, III. 223, 224, 231; XII. 405, 412—its valuable tables, XV. 614, 642.
 EQUITES, in ancient Rome, IX. 317; XIX. 296.
 EQUITY, IX. 317—courts of, *ib.*—a source of law, XIII. 257.
 EQUIVALENT, IX. 318—chemical, *ib.*; VI. 441.
 Equula, genus of fishes, XII. 299.
 EQUULEUS, instrument of torture, IX. 318.——— Equiculus, and Equus Minor, a constellation, IX. 318; IV. 80.
 EQUUS, IX. 318; XIV. 199—fossil, XVII. 173. See Horse.
 ERA, or Æra, IX. 318; II. 175; VI. 665—of the foundation of Rome, 666—Christian, 667—of the Creation, 668—of Constantinople, 670—of Alexandria, *ib.*—of Antioch, 671—of Nabonassar, *ib.*—of the Seleucidæ, *ib.*—of Macedonia, *ib.*—

ERA—ERI

of Alexander, 672—of Tyre, *ib.*—Cæsarean of Antioch, *ib.*—Julian, *ib.*—of Spain, *ib.*—of Actium, *ib.*—of Diocletian, *ib.*—of Martyrs, *ib.*—of the Armenians, 673—of the Hegira, *ib.*—of the Yezdegird, or Galalean, 674—Jewish eras, 669—Chinese, 675—Hindu, 676—dates at which different eras commenced, 677.
 ERANARCHA, Greek officer, IX. 318.
 ERASISTRATUS, IX. 318; XIV. 452—his anatomical knowledge, II. 751—on the nerves, 814—his skill in surgery, XX. 811.
 ERASMUS (Desiderius), IX. 318; XI. 590—effect of his writings in promoting the Reformation, I. 15, *n.* 2—his advice to Ammon for pushing his fortune, II. 719—his influence on the revival of learning, XVII. 523—his New Testament, IV. 696—his controversy with Luther on free will, XIII. 734—on Luther, 724, 727—at Oxford, XXI. 454.
 ERASTUS (Thomas), the originator of Erastian opinions, IX. 323.
 ERATO, a muse, IX. 323; XV. 699.
 ERATOSTHENES, IX. 323—on astronomy, III. 790; IV. 6—on the figure of the earth, IX. 547—on geography, X. 464—467—on geometry, 501—as a philologist, XVII. 517.
 ERATOSTRATUS, IX. 323.
 ERBACH, town of Hesse-Darmstadt, IX. 323.
 ERBIL, town of Persia, IX. 323; III. 396.
 Erbium, a metal, VI. 488.
 Erdmann (M.), on magnetism, XIV. 42.
 EREBUS, IX. 323.
 ——— genus of insects, IX. 214.
 ERECHTHEUS, IX. 323; IV. 192—temple of, 168; III. 515.
 Erectile tissue, II. 799.
 EREKLI, modern name of Heraclea, IX. 323; XI. 317.
 EREMITA, IX. 323; XI. 352.
 Eremophilus, genus of fishes, XII. 263.
 Eresus, genus of arachnides, III. 383.
 ERETHISM, IX. 323.
 Erethistes, genus of fishes, XII. 262.
 Eretison, genus of mammalia, XIV. 187.
 ERETRIA, IX. 323; IV. 199.
 Eretrian school of philosophy, XIV. 499.
 ERFURT, Prussian city, IX. 324—interview between Napoleon and the Emperor of Russia at, X. 151—Electoral Academy at, II. 67.
 ERGASTULUM, IX. 324.
 ERGOT of rye, IX. 324; V. 172; XIV. 439.
 Eriboll (Loch), XX. 840, 841.
 Eric, kings of Sweden, XX. 845, 847.
 Erica, genus of plants, V. 198. See Heaths.
 ERICACEÆ, nat. order of plants, IX. 324; V. 198. See Heaths.
 Erichsen (G. F.), his works on insects, IX. 21.
 Ericht (Loch), XVII. 455.
 ERICIUS, Roman military engine, IX. 324.
 Ericson (Gustavus), XX. 846.
 Ericsson (Mr.), his pyrometer, XVIII. 706—his screw-propeller, XX. 137, 639.
 Eriulus, dentition of, XVI. 452.
 ERIDANUS, river, IX. 324—constellation, *ib.*; IV. 80.
 ERIE, Lake, IX. 324; VI. 136; XVII. 395, 605—harbours on, XVI. 214.——— Canal, XVI. 217; VI. 154.
 ERIGENA (Joannes Scotus), IX. 324—his pantheistic doctrines, XVII. 233.
 ERIGONE, IX. 325, 266.
 Erinaceus, genus of mammalia, XIV. 150—teeth of, XVI. 451.
 ERINITE, mineral, IX. 325; XV. 83, 103.
 ERINNA, Greek poetess, IX. 325.
 ERINNYES, the furies, IX. 325; X. 252.
 Eriocaulonaceæ, nat. order of plants, V. 215.
 ERIOMETER, IX. 325; VI. 651; XVI. 623; I. 897.
 Erioptera, genus of insects, IX. 226.
 Eriphia, genus of insects, IX. 250.
 ERIPHYLE, IX. 325.
 ERIS, goddess, IX. 325.

ERI—ESC

Erismacanthus, fossil fishes, XVII. 117.
 Eristalis, genus of insects, IX. 241.
 ERIVAN, in Russian Armenia, IX. 325; XIX. 551, 521.
 ERLANGEN, town in Bavaria, IX. 325.
 ERLAU, town of Hungary, IX. 325.
 Erman (Prof. Adolphe), on the results of Hansteen's magnetical expedition, I. 991—on electro-magnetism, VIII. 532—his experiments on the electricity of flame, 567—on the geographical distribution of gold, XV. 231.
 ——— (Mr.), on salmon fishings of the Obi, IX. 607, *n.*
 ERMIN, order of knights, IX. 325.
 ERMINE, IX. 325; XIV. 157—its fur, X. 348.
 ——— in heraldry, IX. 325; XI. 325—ermine, *ib.*—ermineois, *ib.*—ermineites, *ib.*
 ERNE, Lough, IX. 325, 514; XII. 505.
 ——— rivers, IX. 514; XII. 505; VI. 347; VIII. 104.
 ERNESTI (John Augustus), IX. 325.
 ——— (AUGUSTUS WILHELM), IX. 327.
 Erodion, genus of arachnides, III. 378.
 Erodus, genus of insects, IX. 129.
 EROS, Greek Cupid, IX. 327; VII. 590.
 EROSION, IX. 327—of rocks, XV. 159.
 EROTIA, Thespian festival, IX. 327; VII. 590.
 EROTIC, IX. 327.
 Erotylus, genus of insects, IX. 151.
 EROUAD, town of Hindustan, IX. 327.
 ERPENIUS, or d'Erpe (Thomas), IX. 327.
 ERPETOLOGY, IX. 327. See Reptilia.
 Ertard, in fortification, IX. 814.
 ERRATIC, IX. 327—blocks, *ib.*; XV. 215; XVII. 603.
 ERRHINE, medicine, IX. 327.
 ERROR, in philosophy, IX. 327—in astronomy, *ib.*—probable errors, XVIII. 624.——— writ of, in law, IX. 327.
 ERSE language, IX. 328.
 Erskine of Dun, XIX. 780.
 ——— (Capt.), on the Fijians, XVIII. 274.——— on the Friendly Islands, 276.
 ——— (EBENEZER), IX. 328; XVIII. 493, 497—monument to, XX. 701.
 ——— (RALPH), IX. 328; XVIII. 498.
 ——— (THOMAS), Lord Erskine, IX. 328.
 ERUGINOUS, IX. 329.
 Eruptions, frequency of volcanic, XXI. 601—cones of, 604.
 Eruthra, temple of Hercules at, VII. 714.
 Erxleben's classification of animals, III. 183.
 Erycina, genus of insects, IX. 208.
 ERYMANTHUS, IX. 329.
 Eryon, fossil animals, XVII. 102.
 ERYSIPELAS, IX. 329; III. 269—surgical treatment of, XX. 827—in sheep, XXI. 578.
 ERYTHRÆ, in Asia Minor, IX. 329.
 ERYTHRÆUM MARE, IX. 329; XIX. 817—perilous of the, II. 209.
 Erythræus, genus of arachnides, III. 388.
 Erythrin, VIII. 285.
 Erythrine, mineral, XV. 104.
 Erythrinidæ, family of fishes, XII. 250.
 Erythrinus, genus of fishes, XII. 251.
 Erythroxyllaceæ, nat. order of plants, V. 186.
 ERYX, in Sicily, IX. 329; VI. 290.——— genus of serpents, XIX. 55.
 ERZEROU, in Armenia, IX. 330; XXI. 284—taken by the Russians, XIX. 495.
 ERZGEBIRGE, mountains, IX. 330, 382; X. 583.
 Es-Sâlih, king of Egypt, VIII. 482.
 ESARHADDON, IX. 330.
 ESAU, IX. 330—the land of, XII. 357.
 ESCALADE, IX. 330.
 Escalloniaceæ, nat. order of plants, V. 194—region of, 228; XVII. 629.
 Escape, in architecture, III. 509.
 ESCAPEMENT of clocks, IX. 330; VII. 7; XVII. 384—gravity escapements, VII. 11—of watches, 32.
 ESCARPMENT, IX. 330, 818.
 Escars, in geology, XV. 215.
 ESCARTELED, in heraldry, IX. 330.
 ESCHALOT, IX. 330.

ESC—ESS

Eschara, fossil animals, XVII. 98.
 ESCHAROTIC, IX. 330.
 ESCHEAT, in law, IX. 330.
 Escher (Mr.), lost in a glacier, II. 625.
 ESCHEVIN, IX. 330.
 Eschschoitz Bay, fossils of, XVIII. 180.——— (F.), his works on insects, IX. 15—on the ciliogrades, XXI. 1000.
 ESCHWEGE, in Hesse-Cassel, IX. 330.
 ESCHWEILER, town in Rhenish Prussia, IX. 330.
 ESCUAGE, IX. 330.
 ESCULENT, IX. 330—roots, XI. 739.
 ESCURIAL, IX. 330—meaning of the name, XIII. 410, *n.* 1—its architects, III. 453, *n.*—library of the, XIII. 409—Arabic MSS. in the, VI. 310—founded by Philip II., XX. 470.
 ESCUTCHEON, or Scutcheon, in heraldry, IX. 331; XI. 324—ornaments of, 335—funeral, 340.
 Esdaille (Dr), his work and experiments on mesmerism, XX. 436, 437.
 Esdraelon, plain of, XVII. 182.
 ESDRAS, Books of, IX. 331.
 Esenbeck (Nees ab), his works on insects, IX. 13.
 Esgair-fraith, lead mine, XV. 245.
 ESHER, in Surrey, IX. 332.
 ESK, rivers, IX. 332—in Cumberland, VII. 576—in Edinburghshire, VIII. 408—in Forfarshire, IX. 782; XIX. 792.
 ESKI-SAGRA, Turkish town, IX. 332.
 Esion (M. d'), on animal magnetism, XX. 418 *et seq.*
 Esmarkite, mineral, XV. 88.
 ESNE, or Esneh, town in Egypt, IX. 332. See Isnê.
 Esocidæ, family of fishes, XII. 253, 254.
 Esocidæ, family of fossil fishes, XII. 347.
 ESOPHAGUS, IX. 332—in man, III. 59—in brutes, 108—in insects, IX. 51—diseases of, in domestic animals, XXI. 564.
 ESOTERIC, IX. 332, 455.
 ESOX, genus of fishes, XII. 254—fossil, 347—angling for *E. lucius*, III. 158, 159.
 ESPALIER, IX. 333—rails, XI. 700.
 ESPALION, French town, IX. 333.
 Espartero (General), XX. 480–483.
 ESPARTO, a kind of rush, IX. 333.
 Espen (Dr Van), on canon law, VI. 190.
 Esper (E. J. C.), his works on insects, IX. 7, 8.
 Espinasse (General), on artillery, III. 689.
 ESPINEL (Vicente) IX. 333—his novel, XIX. 286.
 ESPLANADE, in fortification, IX. 333.
 ESPOUSALS, in law, IX. 333.
 ESQUILINE, hill, IX. 333; XIX. 356, 357.
 ESQUIMAUX, IX. 333; II. 680; XI. 43, 44; XIII. 141; XVIII. 179—in ethnology, IX. 347—their language, II. 694; XI. 44; XIII. 219.
 ESQUIRE, IX. 333; VI. 613.
 Esquirol (M.), on mental diseases, XIV. 528, 537.
 Esquivel (Don Juan d'), governor of Jamaica, XII. 672.
 ESSAYING, IX. 333. See Assaying.
 ESSECK, or Esseg, capital of Slavonia, IX. 334.
 ESSEDARI, IX. 334.
 ESSEN, Prussian town, IX. 334.
 ESSENCE, IX. 334—essences of plants, XVI. 496.——— D'ORIENT, IX. 334.
 ESSENES, Jewish sect, IX. 334, 333.
 ESSENTIAL, IX. 335.——— oils, IX. 235; XVI. 492, 496.
 ESSEQUIBO, county and river, IX. 335; XI. 81; XVII. 646.
 ESSEX, IX. 335—police in, XVIII. 200—population and value of property, VIII. 754.——— (Earl of), in the reign of Charles the First, V. 402 *et seq.*——— (Robert, Earl of), VII. 761; II. 15; VIII. 713—his friendship for Bacon, IV. 352—Bacon's ingratitude to, 353—his failure in Ireland, XII. 478.——— towns in the United States, IX. 337.
 Essington (Port), IV. 300.

ESS—ETH

ESSLING, Austrian village, IX. 337; III. 760—battle of, X. 152.
 ESSLINGEN, in Württemberg, IX. 337.
 ESTAFETTE, IX. 338.
 Estaing (Count d'), V. 484; XVI. 132; XXI. 752.
 ESTATE, in law, IX. 338.
 ESTATES, in a political sense, IX. 338—the three estates, XVII. 291.
 ESTE, town in Lombardy, IX. 338.
 ESTELLA, Spanish town, IX. 338.
 ESTEPONA, Spanish town, IX. 338.
 ESTERHAZY, Hungarian village, IX. 338.
 ESTHER, book of, IX. 338.
 Estheria, fossils, XVII. 101.
 ESTHETICS, IX. 338. See *Æsthetics*.
 ESTHONIA, Baltic province of Russia, IX. 338; XIX. 521—language of, XIII. 215.
 Estimation of motion and forces in dynamics, VIII. 340.
 ESTOILEE, in heraldry, IX. 339.
 ESTOPPEL, in law, IX. 339.
 Estrees (Admiral d'), V. 426.
 ESTREMADURA, IX. 339; XX. 493—apartite found in, II. 415—climate of, XVIII. 394—wines of, XXI. 884, 885.
 ESTREMOZ, Portuguese town, IX. 339.
 ESTRICH, in commerce, IX. 339.
 ESTUARY, IX. 340. See *Æstuary*.
 ESUNCULUS, genus of fishes, XII. 229.
 ETAMPES, in France, IX. 340; XX. 35.
 ETAWEH, in Hindustan, IX. 340.
 ETCHING, IX. 340; VIII. 799, 800, 801—needle, 803.
 — voltaic, XXI. 636—on stone, XIII. 511.
 ETELENT, Arabian town, IX. 340.
 Etells, genus of fishes, XII. 276.
 ETEOCLES, IX. 340; VII. 491.
 Eteocretes, VII. 493.
 ETERNITY, IX. 340.
 ETESIAN WINDS, IX. 340; VIII. 422.
 Ethan, psalms ascribed to, XVIII. 679.
 Ethelbert, VIII. 656.
 Ethelbald, king of England, VIII. 657.
 Ethelbert, king of England, VIII. 657.
 Ethelfleda, VIII. 658.
 Ethelgiva, or Elgiva, VIII. 659.
 Ethelred, king of England, VIII. 657, 660—number of mints in his time, VII. 73—his navy, XX. 119.
 Ethelwold, VIII. 660.
 Ethelwolf, king of England, VIII. 657.
 ETHER, IX. 340.
 — in chemistry, IX. 140—caoutchouc dissolved by, VI. 203—how to inflame it by electricity, VIII. 590—specific gravity of, XII. 89—poisonous qualities of, XIV. 439.
 ETHERIDGE (Sir George), IX. 340.
 Etherow, river, VII. 754.
 Ethical Philosophy, Bacon's disquisitions on, I. 35—Hobbes' principles, 42—Cudworth's system, 44—little attention paid to, at the era of the Restoration, 46—Barrow on, ib.—Dr Law's system, 170, 172 and n. 2—examination of Sir J. Mackintosh's views on, 295, 296 *et seq.*—Butler's definition of self-love, 296—selfish desires, ib., 297—on the existence and supremacy of the conscience or moral faculty, 298—Bentham on the word *ought*, 299—deontology, 300—the formation of our passions, affections, and sentiments of virtue and duty, by means of association of ideas, 305—free-will, 307—division of the subject, 311, 312—Paley's views, 301, 314—retrospect of ancient ethics, 315—ethical philosophers of Greece, 316—Plato, ib.—Aristotle, 317—Epicureans and Stoics, 318—Epicurus and Zeno, 319—system of the Stoics, 320—estimate of the practical philosophy of Greece, 321—literature of Alexandria, 322—scholastic ethics, 323—Jewish and Mahomedan writers, 324—Augustin's system, 325—doctrines of Anselm, Aquinas, Scotus, and Bradwardine, ib.—William of Ockham and John Gerson, 326—Aquinas, ib.—the mystics, 327—temptations and errors of the scholastic age, 328—nomalists and realists, ib.—exten-

ETH—ETR

sive influence of Aquinas' system, 328, 329—Spanish writers on scholastic ethics, 330, 331—modern ethics, 331—Grotius, ib.; on Carneades' principles and arguments, ib. 332—Hobbes' principles, (see Hobbes)—difference between the acts resulting from reason and passion, 347—self-love, 296, 330, 382; difference between it and benevolence, 360—definition of moral sentiments, 362—conscience, 298, 362, 420, 424, 425—avarice, 382—principle of hoarding, ib.—origin of benevolence, 383; pity, one of its sources, ib.—origin of a sense of justice, ib.—crime and duty, ib.—power of association in regard to remorse, 384—moral faculty uniformly spoken of as one, ib.—moral approbation, ib.—right and wrong, duty and virtue, ib.—comparative morality of various religions, 390—ethics should contain principles recognised by every religion, ib.—honour, cowardice, and duelling, 391—social affections and malevolent passions, 397—humility, ib.—love of praise, 398—utility and virtue, 399, 417, 425—affinity of ethics to jurisprudence, 400—direct object of ethics, ib.—intimately connected with law, ib.—Stewart's ethical theory, 409—the main object of conscience is to govern our voluntary exertions, ib.—manner as an index of character and disposition, 411—Dr T. Brown on sympathy and conscience, 415—defect of the terms Association and Suggestion, 417—the laws of God founded on the principle of promoting happiness, 418—the existence of evil, ib.—virtue must be loved for its own sake, 419—primary pleasures, pains and appetites, 421; their number not determined, ib.—two sects, the partisans of the selfish principle, and the advocates of benevolence, ib.—secondary desires or pleasures, 422—anger, 423—magnanimity, ib.—operation of conscience in reference to religious systems, 427—ethical philosophy of Scotland, ib.—of Germany, 428—of Plato, XVII. 807—of the Pythagorean school, XVIII. 711. See *Ethics*.
 ETHICS, IX. 340; XV. 537—Aristotle on, III. 560; Kant, XIII. 50—medical, XIV. 464. See *Ethical Philosophy*, *Moral Philosophy*, *Duty*, *Conscience*.
 ETHIOPIA, IX. 340; II. 56—gold from, XV. 230—calendar, VI. 673—antiquity of painting in, XVII. 46—mountains, 644—Ethiopian race of man, XI. 541; II. 775, 221.
 Ethiopic alphabet, II. 615—Bibles, IV. 700; XIX. 839—language, XIII. 210; XVII. 535.
 ETHIOPS, IX. 340—Æthiops, mineral, VI. 498.
 Ethmoid bone, III. 16, 94.
 — cells, III. 94.
 ETHNARCHA, IX. 340.
 Ethnographical phrenology, XVII. 565.
 ETHNOLOGY, IX. 341; XI. 541; XVII. 641—of Britain prior to historical times, III. 420—its connection with archaeology, 421—Prichard's writings on, XVIII. 512.
 Ethology, political, XIII. 264.
 ETIENNE (St), town in France, IX. 355—manufacture of ribbons at, X. 255.
 — (Charles), his anatomical researches, II. 757.
 Etiolation of vegetables, XIII. 460. See *Blanching*.
 ETIQUETTE, IX. 355.
 Etmeldan, XXI. 372, 374.
 Etna. See *Ætna*.
 ETON, IX. 355—gagging at, 467.
 Etroplus, genus of fishes, XII. 265.
 Etrumeus, genus of fishes, XII. 251.
 ETRURIA, IX. 355—the arched dome invented in, III. 401—cities of, enumeration of their sites, IX. 361—monarchy of, XV. 413—coins of, XVI. 362—list of the cities of, IX. 361. See *Etruscans*.
 ETRUSCANS, IX. 355; XIX. 294—their al-

ETS—EUL

phabet, II. Plate—architecture, III. 443—art, XVII. 48—sculpture, XIX. 849—Etruscan remains at Perugia, XVII. 475—their libraries, XIII. 384—language, 200, 213—wars with the Romans, XIX. 297, 304, 305. See *Etruria*.
 ETSCH, river, IX. 361; II. 141.
 ETTLINGEN, town of Baden, IX. 361.
 ETTMÜLLER (Michael), IX. 361.
 ETTRICK, in Selkirkshire, IX. 362; XX. 41.
 ETTY (William), painter, IX. 362; XVII. 84.
 ETYMOLOGY, IX. 363; X. 744.
 EU, French town, IX. 363—chateau d', ib.—visit of Queen Victoria to, X. 220.
 Euanemus, genus of fishes, XII. 262.
 Euathlus, sophism of, XIII. 634, n.
 EUBŒA, island, IX. 363; II. 10—coins of, XVI. 374—subdued by Mithridates, XV. 284. See *Negropont*.
 EUBULIDES, Megaric philosopher, IX. 364.
 EUBULUS, Athenian comic poet, IX. 364.
 Eucalypti, plants, V. 229; XVII. 629; IV. 261; XXI. 31.
 EUCHARIST, IX. 364; VII. 206. See *Supper* (the Lord's).
 Euchites, devotees, XV. 407.
 Euchlora, genus of insects, IX. 125.
 Euchlorine, VII. 670.
 EUCHOLOGIUM, IX. 364.
 Euchroite, mineral, XV. 103.
 EUCLASE, IX. 364; XV. 88.
 EUCLID of Alexandria, IX. 364; III. 790; X. 499, 500—his Elements of Geometry, I. 551, 700, and n. 3, VII. 249, 250; X. 505; XX. 300—on optics, XVI. 521; I. 619—his Porisms, XVIII. 360, 361; XX. 300—on angles, III. 143—his personal character, 302—his Data, VII. 662; XX. 300.
 — of Megara, XVII. 786—his admiration of Socrates, XX. 379.
 EUCLIDES, disciple of Socrates, IX. 365.
 Eucnemis, genus of insects, IX. 106.
 Euctemon, Greek astronomer, II. 788.
 Eudea, fossil sponges, XVII. 93.
 EUDEMUS, disciple of Aristotle, IX. 366—his astronomy, III. 789—on mathematics, X. 500.
 Eudes, duke of Aquitaine, X. 6.
 Eudialite, mineral, XV. 75.
 EUDIOMETER, IX. 366; I. 962; VI. 464; XI. 623—Cavendish's, VI. 352—Dr Ure's, VIII. 625.
 EUDOCIA, empresses, IX. 366; VII. 315.
 EUDOXIANS, heretics, IX. 366.
 EUDOXUS of Cnidus, IX. 366; X. 467, 499; III. 545, n. 5—his astronomy, 788.
 — of Cyzicus, voyages of, X. 462.
 EUERGETES, title of honour, IX. 366.
 — Egyptian king, XI. 391.
 EUGANEAN HILLS, IX. 367; XII. 636.
 EUGENE (François), PRINCE, IX. 367; X. 34; V. 242—his military exploits, IV. 303—at the battle of Blenheim, V. 448.
 Eugeniocrinus, fossil echinoderms, XVII. 98, 99.
 Eugenius, Roman usurper, VII. 309, 311.
 Englossa, genus of insects, IX. 201.
 Eugnathus, genus of fossil fishes, XII. 336; XVII. 126.
 EUGUBIAN TABLES, IX. 371.
 Eugubio, Italian town, XI. 78.
 EUHARMONIC, IX. 372.
 Eukairite, XV. 118.
 Eulabes, genus of birds, XVI. 753.
 EULER (Leonard), IX. 372—his supremacy as a mathematical analyst, I. 694—the real founder of the theory of continued fractions, 705—his applications of it, ib.—his extension of the properties of angular sections, 712—his algebra, 713—his invention of a method of determining particular integrals, 715—his explication of the principle of partial differences, 716—on dynamics, 719, 724—on magnetism, 742—his attempt to destroy the coloured margin of a focal image, 749—his calculations and discoveries regarding the planetary motions, 781—his researches on comets, 783, 784—on light, 896—his character,

EUL—EUR

II. 90—on achromatic glasses, ib.—employments of his last days, 174—on the arithmetic of sines, 547, 555, 560—on annuities, III. 221—on the problem of the three bodies, 810; IV. 105—his astronomical labours, III. 810—on hydrostatics, XII. 78—on the polarity of the needle, XIV. 4—on life assurance, XII. 398—on mortality, XV. 633—on music, 701—fluxions, IX. 676, 677—on the mode of judging of the strength of a bridge from a model, V. 359—on the equilibrium of vessels, XX. 152—on the strength of columns, 758, 760, 771—his dissertations worthy of perusal, 772.
 Euler (Albert), on overshot wheels, XII. 168—his reacting machine, 172.
 Eulima, genus of mollusks, XV. 383—fossil, XVII. 110.
 Euliste, rock, XV. 135.
 EULOGY, IX. 374.
 Eulopa, genus of insects, IX. 170.
 Eulytine, mineral, XV. 90.
 Eumachus, VI. 285.
 EUMENES, IX. 374; XIII. 773, 774; XIV. 452.
 — I. and II., kings of Pergamus, IX. 374; XVII. 410.
 — genus of insects, IX. 197.
 Eumenia, genus of insects, IX. 208.
 EUMENIDES, the furies, IX. 374, 375; X. 352—dance of, VII. 645.
 Eumerus, genus of insects, IX. 239.
 Eumolpus, genus of insects, IX. 149.
 Eumorphus, genus of insects, IX. 151.
 EUMOLPIDÆ, priests of Demeter, IX. 374; VIII. 629; XV. 753.
 EUNAPIUS of Sardis, Greek sophist, IX. 374.
 Eunice, genus of annelides, XI. 297.
 Eunomia, planet, IV. 91.
 EUNOMIANS, Arian sect, IX. 374.
 EUNUCH, IX. 375; VI. 329.
 Euomphalus, fossil mollusks, XVII. 109, 110.
 Eupatagus, fossil echinoidea, XVII. 100.
 EUPATOR, IX. 375.
 EUPATORIA, or Kozlov, IX. 375; IV. 743; VII. 505—disembarkation of troops near, in 1854, XIX. 502.
 EUPATRIDÆ, IX. 375; IV. 193.
 Eupelix, genus of insects, IX. 170.
 EUPEN, town of Rhenish Prussia, IX. 375.
 EUPHEMISM, in rhetoric, IX. 375.
 Euphonia, genus of birds, XVI. 751.
 EUPHONY, in grammar, IX. 375.
 Euphorbia, genus of plants, V. 206, 123, 127—species in Cape Verde islands, XXI. 544—species of, employed in Ireland for poisoning fish, IX. 622.
 Euphorbiaceæ, nat. order of plants, V. 206.
 EUPHORBIA, IX. 375; V. 206.
 EUPHORBUS, a Trojan, IX. 375.
 EUPHORIUM, IX. 375.
 EUPHRANOR, Greek artist, IX. 375; XVII. 57.
 EUPHRATES, river, IX. 376; IV. 344, 363, 364; XVII. 607, 646.
 EUPHROSINE, one of the Graces, IX. 375; X. 741.
 — genus of annelides, XI. 297.
 Euphyllite, mineral, XV. 79.
 Euplocampus, genus of insects, IX. 218.
 Euplocamus, genus of birds, XVI. 790.
 Eupoda, family of insects, IX. 146.
 EUPOLIS, Athenian poet, IX. 377.
 EUPOMPU, Greek painter, IX. 377; XVII. 54.
 Eupyrion matches, XIV. 351.
 EURE, in France, IX. 377.
 — (Sir Wm.), his account of a dramatic representation of the sixteenth century, VIII. 144.
 EURE-ET-LOIRE, in France, IX. 377.
 Eurhinus, genus of insects, IX. 138.
 Euribia, genus of mollusks, XV. 361—E. Gaudichaudii, ib.
 Euric, Gothic king in Spain, XX. 460.
 Eurina, genus of insects, IX. 254.
 Eurinorhynchus, genus of birds, XVI. 804.
 EURIPIDES, IX. 378; XX. 448, 449—tragedies of, VIII. 138—danced on the

EUR—EVA

stage, 142—Porson's editions of, XVIII. 369—intimacy of Socrates with, XX. 373.
 EURIPUS, strait, IX. 380, 364.
 — in the ancient amphitheatre, IX. 380.
 Eurite, rock, XV. 137—veins of, in granite, 187.
 EUROCLYDON, tempestuous wind, IX. 380.
 EUROPA, in Grecian mythology, IX. 380.
 EUROPE, IX. 380—balance of power in, IV. 387—British colonies in, VII. 147—introduction of cotton manufacture, 440—earliest races inhabiting, VI. 364—state of, at the commencement of the Crusades, VII. 524—origin and development of medicine in, XIV. 451, 457, 463, 466—mineral wealth and produce, XV. 247—ethnology of, IX. 350—portions of, unknown to the ancients, X. 464—rise of European power in India, XI. 481—art of paper-making in, XVII. 251—scholastic learning in, 521—philology first established in, 523—extent of its coast-line, 584—mean elevation of its surface, 590—mountains of, 595, 642—snow-level, 602—rivers, 605—waterfalls, ib.—birds, 633; XVI. 824—fishes, XVII. 636—poetry of modern, XVIII. 106—production of the precious metals in, 462—Presbyterianism in eastern, 486—reptiles, XIX. 31, 51—trade with Russia, 541—course of the rivers of, 181—introduction of tea into, XXI. 89—volcanoes, 603, 605—map of, IX. Plate.
 EUROTAS, river, IX. 404; XIII. 148.
 EURYALUS, a Trojan, IX. 404.
 Euryarthra, genus of fossil fishes, XII. 342.
 Eurybia, genus of insects, IX. 208.
 Eurychora, genus of insects, IX. 129.
 EURYDICE, wife of Orpheus, IX. 404; XVII. 2.
 Eurylaimus, genus of birds, XVI. 757.
 EURYMEDON, river of Asia Minor, IX. 404.
 Eurynictera, genus of fishes, XII. 231.
 Eurynotus, genus of fossil fishes, XII. 334; XVII. 125.
 Eurypterus, fossils, XVII. 101.
 Eurypyga, genus of birds, XVI. 798.
 EURYSTHEUS, king of Argos, IX. 404; XI. 347.
 EUSEBIUS, bishop of Cæsarea, IX. 404—his account of a letter from Abgarus to Jesus, II. 40—on the evangelists, IX. 406.
 — the Asiatic, his blindness and erudition, IV. 779.
 Eustace (Rev. Mr.), on the character of Bossuet, V. 60.
 Eustachian tube, III. 46—Eustachian valve, II. 794; III. 63.
 EUSTACHIUS (Bartolomeo Eustachi), anatomist, IX. 405—his anatomical discoveries, II. 759, 761.
 EUSTATHIUS, bishop of Beræa, IX. 405.
 — archbishop of Thessalonica, IX. 405; XIII. 381.
 — a Græco-Roman jurist, IX. 405.
 EUSTATIUS (St.), island, IX. 405—surrender to the British, V. 496.
 Eustrophus, genus of insects, IX. 132.
 EUSTYLE, IX. 405; III. 509.
 Eusynchite, XV. 106.
 EUTERPE, a muse, IX. 405; XV. 699.
 Euthalius, his division of biblical MSS. into clauses, XIX. 838.
 Euthydemus, XX. 379, 400.
 EUTIX, city in Oldenburg, IX. 405.
 Eutocius, III. 301; X. 499.
 EUTROPIUS, Roman historian, IX. 405.
 — genus of fishes, XII. 262.
 EUTYCHES, founder of the Eutychian sect, IX. 405; XV. 500, 501.
 Euxenides, Greek painter, XVII. 54.
 Euxenite, mineral, XV. 110.
 EUXINE, or Black Sea, IX. 406; IV. 740—comparative freshness of, XVII. 573—specific gravity of its water, ib.
 EVÆSTHETUS, genus of insects, IX. 103.
 EVAGRIUS SCHOLASTICUS, IX. 406.
 Evald (Johannes), Danish poet, XIX. 693.
 EVANDER, IX. 406.
 EVANGELISTS, IX. 406.

EVA—EXC

Evania, genus of insects, IX. 184.
 Evaniales, tribe of insects, IX. 184.
 Evans (Sir De Lacy), XIX. 505—his command of the British legion in Spain, XX. 479, 480.
 — (Mr.), on British coins, XVI. 362 and *n.* 6.
 — (Mr.), his journeys into the interior of Australia, IV. 254.
 — (Oliver), of Philadelphia, his high-pressure steam-engines, XX. 581.
 EVAPORATION, IX. 406; XIV. 646; XI. 270; I. 934—Leslie's atmometer for measuring, IV. 177—cold produced by, VII. 100, 104, 545; VI. 459—principle of its frigorific power, VII. 102—crystallisation by, 506, 507—analysis of beer by, V. 336—in the air-pump, XVIII. 40—electricity developed by, VIII. 566; I. 962—electricity a promoter of, VII. 39—evaporation in steam-boilers, XX. 633.
 Evchester, VIII. 267.
 EVE, mother of mankind, IX. 415; II. 123; XXI. 197.
 EVECTION, IX. 415; IV. 36—discovered by Ptolemy, III. 792.
 EVELYN (John), IX. 415—on agriculture, II. 258—on erratic spiders, III. 382—on the English stage, VIII. 161, 162—on the dispersion of libraries, XIII. 398—his Sylva, XXI. 267—on shipping, XX. 128.
 — (Sir George S.), his barometrical measurements, IV. 465, 466—on weights and measures, XXI. 800, 802.
 EVEMERUS, IX. 415.
 Evening-primrose order of plants, V. 192.
 Eventuality, phrenological faculty, XVII. 563.
 Everest (Col.), his measurement of arc of meridian, in India, I. 853; IX. 552.
 — mount, in Nepal, XV. 667; XVI. 141.
 Evergreens, VII. 698; XI. 696, 748; XVII. 755, 760.
 Eversmann (E.), his work on insects, IX. 21.
 EVESHAM, in Worcestershire, IX. 416.
 EVIDENCE, IX. 416—judicial, 418—unwritten or oral, 419—the economists on, VIII. 377—circumstantial, XIII. 262—Dr Beddoes on demonstrative, IV. 566—law of, VIII. 790—of poisoning, XVIII. 131.
 EVIL, IX. 420—origin of, I. 418; III. 311; XIII. 90—its existence inexplicable, I. 468.
 EVIL-EYE, IX. 421; VIII. 446—king's evil, ib.; XIX. 842.
 EVOCATI, Roman soldiers, IX. 421.
 EVOLUTION, IX. 421—in algebra, II. 497—evolutions in seamanship, XX. 15 *et seq.*
 EVORA, Portuguese city, IX. 421.
 EVREMOND (Charles M. de St Denys), IX. 422.
 EVREMONIANA, II. 739.
 EVREUX, French town, IX. 422.
 EWALD (Johannes), Danish poet, IX. 422; VII. 750.
 — on the Egyptian language, XI. 412—on the Pentateuch, XVII. 401, 402.
 Ewes, milk of, XV. 11. See Sheep.
 Ex, or Exe, river, IX. 423; VII. 763.
 EXALTATION of the Cross, Roman Catholic feast, IX. 423; VII. 520.
 — Christ's state of, XXI. 211.
 EXAMINATIONS, IX. 423—different kinds of, ib., 424, 425—academical examinations at Bologna, XXI. 451; Oxford, 458; Cambridge, 464; London, 467. *et seq.*
 Example, argument from, XIX. 124, 125.
 EXARCH, IX. 427—of a diocese, ib.
 EXAUCTORITAS, IX. 427.
 EXCAMBION, IX. 427.
 EX CATHEDRA, IX. 427.
 Excavator, V. 731.
 EXCELLENCY, title of honour, IX. 427.
 EXCENTRIC, IX. 427.
 EXCENTRICITY, in astronomy, IX. 427.
 EXCHANGE, IX. 428—inland, ib.—foreign, 430—nominal, ib.—real, 435—computed, 440. See Bills of Exchange.

EXC—EXP

EXCHANGE or Bourse, IX. 447; V. 21—Royal Exchange of London, XIII. 663; XI. 59; clock of, VII. 19, 20, 21—in Dublin, VIII. 225—Stock Exchange, London, XIII. 663.
 EXCHEQUER Bills, IX. 447.
 — COURT OF, IX. 447; II. 7.
 — CHAMBER, Court of, IX. 448.
 — Chancellor of the, VI. 412.
 — in Scotland, IX. 448.
 EXCISE, IX. 448—duties, XXI. 59—Sir R. Walpole's scheme of, V. 457; XXI. 692—laws regarding distillation, VIII. 49, 50—duties, in Scotland, XIX. 808.
 Excitability, vegetable, XI. 693.
 Exclamation, in rhetoric, XIX. 123.
 EXCLUSION, Bill of, IX. 449; V. 427.
 EXCOMMUNICATION, IX. 449—in the Greek Church, XI. 19.
 Excretions, XVII. 665, 666, 667—of roots, V. 100.
 EXCUBILE, IX. 449.
 EXCUSATI, IX. 450.
 Exe, river. See Ex.
 EXECRATION, IX. 450—morsel of, VII. 418.
 EXECUTION, IX. 450; VIII. 791—for crimes in England and Wales, 750—pleas in bar of, XIV. 445.
 EXECUTIVE, IX. 450—power, VIII. 775—in the United States, XXI. 429.
 EXECUTOR, in law, IX. 450.
 EXECUTRY, in Scots law, IX. 451.
 EXEDRA, IX. 451.
 EXEGESIS, IX. 451; XVII. 526.
 EXEGETES, IX. 451.
 EXEGETICA, in algebra, IX. 451.
 EXEGETICS, in theology, IX. 451.
 Exercise, conducive to health, XIV. 441; XIX. 611—of artillery, III. 696—æora or gestation, II. 164—fencing, as an exercise, IX. 503 and *n.*—riding, XI. 673—swimming, XX. 880.
 EXERGUE, in numismatics, IX. 451; XVI. 353.
 EXETER in Devonshire, IX. 451—vale of, VII. 762—cathedral, III. 482; VII. 764—savings-bank at, XIX. 657.
 — College, Oxford, XXI. 459.
 EXPOLIATION, in surgery, IX. 452.
 Exhalants of the human body, II. 802.
 EXHALATION, IX. 452—of leaves, V. 103—of gaseous matter from plants, 104. See Evaporation.
 EXHAUSTIONS, in mathematics, IX. 452.
 EXHIBITION, IX. 453—of works of the fine arts, ib.; XVII. 85—great exhibition of 1851, ib.; opening of, by the Queen, V. 672—French exhibition of 1855, IX. 454; X. 257—of the fine arts in Dublin, VIII. 228—art treasure exhibition at Manchester, XIV. 256.
 Exhibitioners at Oxford, XXI. 456.
 EXIGENT, a writ in law, IX. 454.
 EXILE, IX. 454. See Ostracism.
 Eximeno, on music, XV. 716.
 Existence of God, XXI. 185.
 Exmoor forest, XX. 410.
 EXMOUTH, town in Devonshire, IX. 454.
 — (Lord), his expedition against Algiers, II. 572; V. 621.
 EXOCETUS, genus of fishes, XII. 264.
 EXODIUM, IX. 455.
 EXODUS, Book of, IX. 455; XVII. 400—of the Israelites, VIII. 458.
 — papyri, XVII. 264.
 EXOGENOUS plants or Exogens, IX. 455; V. 80, 83, 179; XXI. 267.
 Exoglossum, genus of fishes, XII. 258.
 Exogyra, fossil mollusks, XVII. 105.
 EXORCISM, IX. 455—in baptism, IV. 424.
 EXORCISTS, IX. 455.
 EXORDIUM, in rhetoric, IX. 455.
 EXOSMOSE and ENDOSMOSE, IX. 455; XII. 101, 102; VIII. 603; V. 68.
 Exosperm, in botany, V. 139.
 Exospores, in botany, V. 142.
 Exostosis, XXI. 557.
 EXOTERIC and ESOTERIC, IX. 455, 332.
 Exothecium, in botany, V. 126.
 EXOTIC, IX. 455.
 Expansibility of air, XVIII. 31, 50.
 EXPANSION, IX. 455—produced by electricity, VIII. 589—by heat, XI. 267—

EXP—EYE

of the gases, I. 935, 957 and *n.* 4—valves, XX. 585, 654—work of steam with and without expansion, 620, 621, 624, 627.
 Expansive engine, Watt's, XX. 579.
 EXPECTATION, IX. 456. See Probability.
 — of life, IX. 456; XV. 647—in different countries, XII. 395; XVIII. 351, 353; in England, 355. See Annuities.
 Expenditure of the United Kingdom, VIII. 751—of the United States, XXI. 428.
 Experience, sources of, XIV. 562—probability of future events derived from, XVIII. 604—its testimony slighted by Plato, XVII. 802.
 EXPERIMENTAL PHILOSOPHY, IX. 456; I. 800.
 EXPERIMENTUM CRUCIS, IX. 456.
 EXPIATION, feast of, IX. 456.
 EXPLOSION, IX. 456—in powder manufactories, XI. 159—in coal mines, VII. 124—lateral explosion, in electricity, VIII. 613—of steam-boilers, XX. 634, 651; rarity of, in British steam-vessels, ib.
 EXPONENT, in algebra, IX. 457; II. 491.
 — of the ratio, in arithmetic, IX. 457.
 EXPONENTIAL calculus, IX. 457; VI. 68—curve, IX. 457—equation—quantity, ib.
 Exports from England, VII. 190.
 — from the United Kingdom, VIII. 736, 737—of grain, VII. 397—decline in the real, and increase in official, value of, 737—of cotton manufactures, 456—of British produce, value of, XIV. 275; VIII. 733; to the Mediterranean, XIV. 470—of leather, XIII. 311—of duties on, XXI. 59—of the United States, 426.
 EXPOSING OF CHILDREN, IX. 457.
 — in China, VI. 595.
 EX-POST-FACTO, IX. 457.
 EXPRESSED OILS, IX. 457; XVII. 408. See Oils.
 Expression, Sir C. Bell on the anatomy of, IV. 630—in music, XV. 715—in sculpture, XIX. 854 *et seq.*
 Expurgatory Indexes, IV. 712.
 Extension, a primary quality of matter, XIV. 570—consciousness of, 566, and *n.* 1.
 EXTENT, in law, IX. 457.
 Extinction of volcanic foci, XXI. 606.
 EXTRACT, in pharmacy, IX. 457.
 — of lead, IX. 457.
 EXTRACTION of roots, in algebra and arithmetic, IX. 457; II. 497; III. 606.
 EXTRAORDINARI, in the Roman army, IX. 457.
 EXTRAVAGANTES, IX. 457; VI. 190.
 EXTRAVASATION, IX. 457—of blood, XVII. 690.
 EXTREME, in logic, IX. 458; XIII. 607.
 — and mean proportion, in geometry, IX. 458.
 — UNCTION, IX. 458; XVIII. 336.
 Exudation of *liquor sanguinis*, XVII. 690 inflammatory, ib.—tubercular, ib.—cancerous, ib.—theory of the exudations, 693.
 EXUVIÆ of animals, IX. 458.
 Ex, IX. 458.
 Eyedoux, on the mollusca, XV. 327, 376.
 EYE, town in Suffolk, IX. 458.
 — IX. 458; XIII. 461; XVI. 694—its structure first analysed by Kepler, I. 625—muscles of, III. 39, 45—anatomy of, 43—polarisation produced by, XVI. 676—its state for making microscopical observations, XV. 800—structure and functions, XVII. 677, 678—alleged reading of clairvoyants without the aid of, XX. 438—of the lower animals, III. 94—of ants, 262—of the arachnides, 368—those of spiders phosphorescent, 378 *n.*—of albinos, II. 4—its diseases in the domestic animals, XXI. 576—effects of galvanism on the, 634—of the crustacea, VII. 538—of insects, IX. 46; III. 98—of fishes, XII. 219—mammalia, XIV. 133—leeches, XI. 305, *n.* 3. See Eyeball, Eyelids, Optics, Sight.

EYE—FAC

- Eye of plants, propagation by, XI. 694.
— of tuberous plants, V. 79.
Eye-glass micrometer, XIV. 745.
Eye-lids, III. 45—third eye-lid, or nictitating membrane, 98.
Eye-teeth, III. 25.
Eyeball, XVII. 678.—its form in different animals, III. 95.
Eyebright, V. 202.
EYEMOUTH, in Berwickshire, IX. 458—fishings of, IV. 680.
Eyk (Van), XVII. 63.
Eylais, arachnides, III. 389.
Eylau, battle of, X. 145; XIX. 493.
EYRE, in law, IX. 458.
— (Edward John), his explorations in Australia, IV. 256.
Eytelwein on the motion and velocity of water, XII. 74—on hydrodynamics, 76, 112, 120, 128 *et seq.*
EZEKIEL, the prophet, IX. 458—style of, XVIII. 98—his description of Tyre, XXI. 405.
EZIONGEBER, IX. 459; II. 434; XXI. 27, 28.
EZRA, IX. 459; XII. 767—Old Testament canon completed by, IV. 696—the supposed author of Chronicles, VI. 663; IV. 696.

F

- F, letter of the alphabet, IX. 460—in abbreviations, II. 610.
Fabaceæ, nat. order of plants, V. 190.
Fabbioni on the chemical origin of galvanism, I. 964—his discovery of a substance forming swimming bricks, V. 346.
Faber (Peter), Jesuit, XII. 751.
FABII, Roman family, IX. 460.
FABIUS PICTOR, IX. 460.
— MAXIMUS Verrucosus, IX. 460—his war with Hannibal, VI. 295; XIX. 310, 311.
— Ambustus, IX. 460; XIX. 303.
FABLE, IX. 461—origin of, II. 187; XV. 759—fables of Lokman, XIII. 636; Phædrus, XVII. 504; La Fontaine, IX. 751; Dryden, VIII. 203; Æsop, II. 187; Wilkie, XXI. 867; Yriarte's, 966.
Fabiliaux, French, XVIII. 115.
FABRETTI (Raffaele), antiquary, IX. 463.
FABRIANO (Gentile da), painter, IX. 464.
— Italian city, IX. 464.
FABRICIUS (George), poet, IX. 464.
— (Jerome), Acquapendente, IX. 464—his anatomical discoveries, II. 760—on surgery, XX. 818.
— (JOANNES ALBERTUS), IX. 464.
— (JOHANN CHRIST), entomologist, IX. 465, 466—merits of his system, III. 183—on the crustacea, VII. 540—on entomology, IX. 33 *et seq.*
— (John), on the sun's spots, IV. 25.
— (Otho), on the insects of Greenland, IX. 63—on ornithology, XVI. 729—on the ovum of *Borée*, XXI. 1000.
FABROT (Charles-Annibal), IX. 466.
Fabry (Honoratus) on aeronautics, II. 165.
FABYAN (Robert), IX. 466.
Façade, in architecture, III. 509.
FACCIOLATI (Jacopo), IX. 466.
Face, constituent parts of, III. 1—bones of, 21—its general properties, 29—muscles of, 39—bones of, in the mammalia, 78; XIV. 133—in birds, III. 85.
Face-bedded work, in masonry, XX. 713.
FACIAL ANGLE, IX. 466; III. 30, 79; XIV. 137, *n.* 1.
— bones, in brutes, III. 78.
FACIES HIPPOCRATICA, IX. 466.
FACTION, IX. 466.
FACTOR, IX. 466. See Agent.
— in arithmetic and algebra, IX. 466; III. 585; II. 491—binomial factors, IX. 285.
FACTORY, IX. 466—cotton factories in Lancashire, VII. 451; XIV. 252; in Scotland, VII. 451; in United Kingdom, 454; XIV. 286, 288—persons employed in factories, VII. 454; XIV. 289

FAC—FAI

- horse-power employed in, 288—condition of females in, 280—economy of, 281—influence of labour in, on intelligence and health, 279; on the well-being and opinions of the operatives, *ib.*—weekly earnings of workers in, 253—in Lanarkshire, XIII. 175—factory acts, XXI. 790—inspection of factories, 791—returns, 792—meaning of the word in France, 793. See Manufactures.
FACTORY, in commerce, IX. 467.
FACULÆ, in astronomy, IX. 467; IV. 28 *et seq.* See Solar Spots.
Faculties in universities, XXI. 475, *et seq.*
FACULTY, IX. 467—organs of the faculties, in phrenology, XVII. 562, 673—intellectual faculties, 563—combinations of, 564—theory and classification of, 566—according to metaphysicians, 673—derangement of, XIV. 529—obliteration and non-development of, *ib.*
— Dean of, IX. 467; VII. 689. See Advocates.
Fad, loch, VI. 25.
Fænus, genus of insects, IX. 184.
FAENZA, Italian town, IX. 467.
FAERNUS (Gabriel), IX. 467—his edition of Terence, XXI. 158.
FÆSULÆ, now Fiesole, Etrurian city, IX. 467—theatre at, 359.
FAGGING, in schools, IX. 467—at Eton, 355—evils of, XIV. 444.
— a mode of reaping, II. 313.
FAGGOT, IX. 467.
Fagnani (Count de), on fluxions, IX. 679.
FAGUS, beech-tree, IX. 467. See Beech.
Fahlberg's observations on the *Gymnotus electricus*, VIII. 575.
Fahlre, XV. 120.
Fahlun, copper and iron mines, XV. 239; XX. 862.
Fahlunite, mineral, XV. 89.
FAHRENHEIT (Gabriel Daniel), IX. 467—his areometer, III. 391—his thermometer, IV. 457; XXI. 222, 223—his hydrometer, XII. 86.
FAIENCE, IX. 467.
FAIFO, town of Cochinchina, IX. 468; VII. 49.
FAINTING, IX. 468. See Syncope.
Fairbairn (W.), his assistance to Mr Stephenson in erecting the Menai tubular bridge, I. 877—experiments on the strength of iron, XII. 566, 567, 569, 571, 572—his iron-steamers, XX. 137, 174—on the strength of iron plates, 175—of rivets and riveted joints, *ib.*, 176—on the strength of iron beams, 177—on the resistance of iron to bulging force, 182—his double-flued boiler, 354—on the prevention of smoke in furnaces, 355—on the law of density of steam, 572—his description of the steam-engines erected by him at Saltaire Mills, 603—on the collapse of steam-boiler flues, 616—his plan for strengthening flues, 634—on the rupture of boilers, 635—on the strength of materials, 780, 781.
FAIRFAX (Edward), poet, IX. 469—his translation, XXI. 35.
— (THOMAS, Lord), IX. 469; V. 404 *et seq.*—defeat at Atherton Moor, 404.
— (Lord), XXI. 742.
FAIRFORD, town in Gloucestershire, IX. 471.
FAIRIES, IX. 471—still believed in, in some parts of Britain, I. 464.
— of the mine, IX. 471—fairy circle, or rings, *ib.*; V. 100; XX. 839.
FAIR-ISLE, IX. 469; XX. 113.
FAIRS AND MARKETS, IX. 468—Edinburgh, VIII. 405—France, X. 263—Falkirk, IX. 474—of Leipsic, XIII. 325—Germany, X. 590—Glasgow, 655—Hindustan, XI. 459—Hurdwar, XII. 49—Hungary, 17—Nijni-Novgorod, XVI. 267.
Fairy, screw steam yacht, description of, XX. 665.
— Tales, XIX. 287.
FAITH, IX. 471—in theology, 471; I. 522—impropriety of making a certain faith necessary for civil privileges, 534.
— (St), fairs at, IX. 468.

FAI—FAN

- Faizâbâd, town in Oude, XVII. 18.
FAKENHAM-LANCASTER, in Norfolk, IX. 472.
Fakhr-ed-Dîn, XX. 268, 270.
FAKIR, a religious mendicant, IX. 472—Fakir's houses, XI. 469.
FALAISE, French town, IX. 473.
FALASHA, or Talashas, people of Abyssinia, IX. 473; II. 56.
FALCATED, IX. 473.
Falcinellus, genus of birds, XVI. 804.
Falco, genus of birds, XVI. 745.
FALCON, IX. 473; XI. 248; XVI. 745.
Falconidae, family of birds, XVI. 740.
FALCONER (William), IX. 473—poetry of, XVIII. 124.
— (Dr), on the pleistocene fossil mammalia, XV. 216.
FALCONRY, IX. 473; XI. 247; XX. 209, 210.
Falcunculus, genus of birds, XVI. 748.
Faldernmann (F.), his works on insects, IX. 20.
FALERII, Etrurian city, IX. 473.
Falerian wine, XXI. 882.
FALEARNUS AGER, in Campania, IX. 474.
FALKIRK, IX. 474—battles of, V. 461; XIX. 755; XXI. 686—fairs, or trysts at, IX. 468; XX. 703—iron-works, 704—carse of, VI. 276.
FALKLAND, town in Fife, IX. 474—palace of, *ib.*
— ISLANDS, IX. 474; V. 242—flora of, 228; XVII. 629—dispute regarding them between Britain and Spain, V. 470—tussac grass of, II. 330.
— (Lucius Cary, Lord), VI. 306—death of, V. 404.
FALL, Scotch measure, IX. 475.
— OF MAN, IX. 475; II. 123—narrative of, in Genesis, considered as a mere allegory, XXI. 198—man's present state since, *ib.*
— RIVER, town in Massachusetts, IX. 475.
— of the leaf, V. 109.
FALLACY, IX. 475; XIII. 613, *n.*
Fallen (C. F.), his entomological works, IX. 12.
Fallenia, genus of insects, IX. 233.
FALLING or SHOOTING star, IX. 479, 587; VIII. 588; XIV. 688. See Meteorolite.
FALLING-SICKNESS, IX. 479, 275. See Epilepsy.
FALLOPIAN TUBES, IX. 479; III. 71.
FALLOPIO (Gabiello), IX. 479—his anatomical discoveries, II. 759, 761.
Fallow-deer, XIV. 207—shooting of, XX. 211.
Fallowing, in agriculture, II. 289—summer or naked fallow, 291—Tennant's system of winter fallowing, 290—rag-fallowing, 307.
Fallows (Rev. Fearn), his pendulum observations, IX. 573, 574—astronomer at the Cape of Good Hope, III. 818.
Falls, in hunting, IX. 683.
FALMOUTH, in Cornwall, IX. 479.
— in Jamaica, XII. 680.
Falsehood, XV. 566.
Falsequarter, XXI. 562.
FALSTER, island in the Baltic, IX. 479.
Falterona (Mount), in Tuscany, XXI. 392.
FALUN or Fahlun, Swedish town, IX. 479—copper mines, XV. 239; XX. 862.
Falx of the dura mater, III. 56.
FAMA, goddess, IX. 479.
— CLAMOSA, IX. 480.
FAMAGOSTA, town in Cyprus, IX. 480; VII. 610.
FAMILY, IX. 480.
— in natural history, IX. 480; V. 175; XV. 67, 68.
Famine at Antioch about the year 331, III. 274—in India, XI. 453—in Egypt, VIII. 478—Ireland in 1846, IX. 629—Italy in 1347, XII. 650.
FAN, IX. 480—fan-palm, V. 214.
Fanariots, IX. 14.
FANATICISM, IX. 481.
FANCY, IX. 482—poetic, XVIII. 93, 94. See Taste, Apparitions.
Fane (Sir Henry), XI. 667.

FAN—FAR

- Fangs of serpents, III. 113; XIX. 44—of a tooth, XVI. 439.
Fanin (Father), VII. 680.
FANTIONS, IX. 482.
FANNERS, IX. 482; II. 283; XVIII. 87.
FANO, city in Papal States, IX. 482.
— island, XII. 451.
FANSHAWE (Sir Richard), IX. 482.
FANTASIA, in music, IX. 482.
Fantees, III. 275.
Faraday (Michael), I. 977—his early history and connection with Davy, *ib.*—variety of his publications, *ib.*—his researches on electricity, *ib.*—on electro-magnetic rotations, *ib.*, 975—on the identity of electrical and chemical forces, 978—on the uniform nature of electricity from whatever source, 979—volta-electrical induction, *ib.*—his discovery of dia-magnetism, 980—on the magnetism of oxygen, 981—on the optical changes induced by magnetism, *ib.*—liquifies certain gases, 982—his wide reputation, *ib.*—his electrical discoveries, VIII. 532—discovery of magneto-electricity, *ib.*, I. 979—his new law of electrical conduction, VIII. 533, 542; I. 978—his theory of statical electricity, VIII. 533—on the electricity produced by friction, 539—on the velocity of electricity, 543—on the distribution of electricity, 552—on the pyro-electricity of oxalate of lime, 561—on the electricity of the solar rays, 569—on the *gymnotus*, 576—on electro-chemical decomposition, 596; I. 978—on Mr Barry's experiments, VIII. 597—on electro-magnetism, 601—his improvements on the electrophorus, 607—his experiments with an insulated wire, 613—his instructions for using electrometers, 617—on magnetic metals, XIV. 16—on para and dia-magnetism, *ib.*, 30—on the variation of the needle, 68—on filtration, IX. 582—his analysis of tea-growing soils from China, XXI. 84—his voltaic trough, 612—his voltmeter, 619—on the difference between ordinary and voltaic electricity, 621—on electric conduction, 622—on the chemical effects of voltaic electricity, 628—his further researches, 629, 630—on magnetic electricity, 644, 645, 646.
FARCE, IX. 482.
FARCY, a disease in horses, IX. 482; XXI. 573.
Fardlebound, a disease of cattle, XXI. 567.
FAREHAM, town in Hants, IX. 482.
Farel, reformer, VI. 109, 110.
FAREWELL, cape, IX. 483; XI. 38 *et seq.*
Farey's elliptograph, VIII. 639.
Fargeau (L. de St.), his works on insects, IX. 13.
FARINA, IX. 483.
Fario, genus of fishes, XII. 245.
Farionella, genus of fishes, XII. 248.
FARM, IX. 483; II. 364 *et seq.*—capital required for, 366—number of farms in Britain, IX. 483—in France, X. 249—size of, II. 364—size of English, VIII. 724—size of Irish, XII. 513—small farms increase the price of raw produce, VII. 429—large and small farms compared, 428—in Prussia, XVIII. 665.
— labourers, II. 366; IV. 680.
— buildings, II. 267, 371—house, 268—cottages, *ib.*
FARMER (Hugh), IX. 483.
— (RICHARD), D.D., IX. 483.
Farmers, education of, II. 366—clubs, 265.
Farming of taxes, XXI. 42, 43.
FARNABIE (Thomas), IX. 483.
Farnese (Cardinal), VI. 227.
— PALACE, IX. 484; III. 452, 479, 485.
FARNHAM, town in Surrey, IX. 484—Royal Military College at, II. 71—its hops, XX. 836.
FARNOVIANS, heretics, IX. 484.
FARO, Portuguese town, IX. 484.
— cape, in Sicily, IX. 484.
— game with cards, IX. 484.
FAROE, islands, IX. 484; VII. 745—Faroese ballads, IV. 397.

FAR—FAY

FARUËLITE, mineral, XV. 75.
 FARQUHAR (George), dramatist, IX. 485; VIII. 162; XXI. 172.
 FARQUHARSON (Rev. James), on aurora borealis, IV. 245, 248.
 FARR (Dr), on life assurance, XII. 399, 402—on medical jurisprudence, XIV. 424—on vital statistics, XVIII. 837.
 FARRER (E. James), on life contingencies, XII. 396, 398.
 FARRIER, IX. 485.
 FARRIERY, or veterinary science, IX. 485; XI. 671; XXI. 554.
 FARRINGTON, GREAT, in Berkshire, IX. 485.
 FARs, or FARSISTAN, in Persia, IX. 486.
 FARSHOOT, in Egypt, VIII. 424.
 FARTASH, cape, IX. 486.
 FARTHING, IX. 486—of gold, VII. 77.
 FARTHINGALE, IX. 486.
 FASCES, IX. 486.
 FASCIA, IX. 486—in anatomy, II. 824—in architecture, IX. 486; III. 509.
 Fascicle, in botany, V. 117.
 FASCINATION, IX. 486.
 FASCINES, IX. 486, 804.
 Fasciola, genus of entozoa, XXI. 980.
 FASHION, IX. 486—its effect on taste, IV. 546.
 FAST, IX. 488; II. 51; III. 180; VIII. 22—Mohammedan fasts, XV. 303—in the Greco-Russian church, XIX. 527—death from fasting, XIV. 430.
 FASTERN'S EVE, IX. 489.
 FASTI, IX. 489—Dies fasti, ib.
 FASTOLFF (Sir John), IX. 489.
 FAT, IX. 490; II. 788; XVI. 492; VI. 510; XVII. 655—tissue containing, II. 787—fatty degeneration, XVII. 690, 696—consumption of, in the Polar regions, 658—alimentary qualities of, VIII. 20—in insects, IX. 50.
 —or fatty matter, of plants, V. 73; IX. 756; II. 381.
 —or VAT, IX. 490.
 FATA MORGANA, IX. 490—in the great Hungarian plain, XII. 10—in Antrim, III. 285—F. glacialis, XVIII. 168, *n.* See Mirage.
 FATALIST, IX. 490. See Predestination.
 FATE, IX. 490.
 FATES, IX. 490; XVII. 272.
 FATHIMITES, or Fatimites, IX. 490.
 FATHER, IX. 490. See Parent.
 —in theology, IX. 490.
 FATHERS, in the primitive church, IX. 490.
 FATHOM, IX. 492.
 Fatio de Duillier, IX. 672.
 Faugher, battle of, XII. 470.
 Faujasite, mineral, XV. 77.
 Faults in rocks, XV. 171, 176, 177; XVII. 621.
 FAUN, IX. 492.
 FAUNA, in mythology, IX. 493; V. 4.—in natural history, IX. 493.
 FAUNALIA, rural festival, IX. 493.
 Faure (M.), on the cabinet of medals at Madrid, XIII. 409.
 Faust, magician, X. 362.
 Faustin I., emperor of Hayti, II. 708; XI. 661.
 FAUSTINA, wife of Marcus Aurelius, IX. 493; XIX. 344, 345; XIII. 279.
 FAUSTUS, IX. 493. See Fust.
 Favé (Captain), on the emperor of the French's system of artillery, XI. 140—on the origin of gunpowder, 151.
 FAVERSHAM, town in Kent, IX. 493—James II. at, V. 438.
 FAVIGNANA, island, IX. 493; XX. 246.
 FAVISSÆ, IX. 493.
 FAVONIUS, IX. 493.
 FAVORINUS, sophist, IX. 493.
 Favostidæ, XXI. 1006—fossil, XVII. 96, 97.
 Favre (M.), on the heat of combustion of coal, XX. 630.
 FAWKES (Francis), IX. 493.
 —(Guy), his connection with the gunpowder plot, V. 385.
 FAWN, IX. 493—colour-dyeing of, VIII. 308.
 Fay (M. du), on dew, VII. 766, 767, 769.

FAY—FEL

FAYAL, one of the Azores, IX. 493; IV. 336.
 Fayalite, mineral, XV. 89.
 Fayette (Marquis de la), V. 483.
 FAYOUM, in Egypt, IX. 493; VIII. 503.
 FE, FO, or FOH, Chinese god, IX. 493; VII. 243, 717—religion of, XV. 761, 762; VI. 569.
 FEALTY, in feudal law, IX. 493.
 FEAR, IX. 493—its tendency to make nations take excessive precautions against enemies, VII. 145—monomania of, XIV. 531.
 Fearnall (Mr), his steam-boats, XX. 137.
 Fearn (Mr), on electric vibrations, XXI. 631.
 FEAST, or Festival, IX. 494—feasts of the ancients, ib.—church feasts, VI. 89—dancing at, VII. 645—religious festivals of the Egyptians, VIII. 443, 448.
 Featham (Messrs), their stoves, XX. 743.
 Feather ore, XV. 119—feather-grass, XIX. 515.
 Featherings, in architecture, III. 509.
 FEATHERS, IX. 495; XVI. 735—uses to man, IX. 496—plucking of, XIII. 491—collectors of, Galway, X. 391.
 FEBRIFUGE, IX. 496.
 FEBRUARY, IX. 496—gardening calendar for, XI. 758.
 Feburier's hive, III. 295.
 FÉCAMP, French town, IX. 496.
 Fechner's experiments on Ohm's theory of electrical conduction, I. 984.
 Feciales. See Fetiales.
 Fecundation of germs, XVII. 683.
 Fecundity of the queen-bee, IV. 583.
 FEDERAL, IX. 496.
 FEE, in law, IX. 498.
 Feeding of live stock, II. 339, 418—of milk cows, VII. 621.
 FEEJEE ISLANDS, IX. 499; XVIII. 273—inhabitants of, 274, 275; IX. 347.
 Feeling, Dr T. Brown's application of the term, I. 413. See Ethical Philosophy.
 —(sense of), XIV. 565—in bees, IV. 575—weak in insects, III. 177.
 Feelings, arrangements of, in phrenology, XVII. 562.
 Fehmic courts, XXI. 532.
 Fehrbellin, battle of, XVIII. 649.
 Feilitzsch (Prof.), on hydraulics, XII. 155.
 Feirings, in ploughing, II. 286.
 FEITH (Rhynvis), Dutch poet, IX. 499.
 Felahi, VIII. 107.
 FELEGYHAZA, in Hungary, IX. 499.
 FÉLIBIEN (André), IX. 499.
 —(Jean François), IX. 499.
 FELICITAS, IX. 449.
 Felicudi, island, XIII. 502.
 FELIS, genus of quadrupeds, IX. 499; XIV. 168—bones of the foot in this genus, III. 82—organs of the voice, 101—dentition, XVI. 459—fossil species, XVII. 171.
 FELIX (M. Minucius), IX. 499.
 —name of several Roman pontiffs, IX. 499.
 —V., II. 644.
 Fell (Bishop), his abuse of Hobbes, XI. 550.
 Fellatás, XI. 776, 779; II. 222; V. 51.
 FELLENBURG (Emmanuel von), IX. 499.
 —his school at Hofwyl, XVII. 477.
 Felling of timber, VIII. 210; XX. 170; XXI. 273.
 FELLOW, in colleges, IX. 500; XXI. 456. See Universities.
 Fellows (Sir Charles), his researches in Lycia, III. 503—on the coins of Lycia, XVI. 377.
 FELO DE SE, IX. 500. See Suicide.
 FELON, in law, IX. 500—ancient punishment of, XII. 379.
 FELONY, IX. 500.
 Feloo, cataract of, XX. 49.
 Feloops, African nation, II. 222; IX. 352.
 FELSPAR, IX. 501; VI. 481; XV. 70—amorphous, 72—changes in the decomposition of, II. 390—analysis of, 389.
 Felspathic lavas, XV. 132—traps, 134—ash, 135.
 Felstone, XV. 134—columnar, 166—relations between it and greenstone, 189.
 FELT, IX. 501.
 FELTHAM (Owen), IX. 501.

FEL—FER

Felting, VIII. 275; X. 350, XI. 240, 241—distinguished from weaving, XXI. 780.
 Felton on Dryden, VIII. 203.
 —assassin of the Duke of Buckingham, V. 392.
 FELTRE, Italian town, IX. 501.
 FELUCCA, IX. 501; IV. 800.
 Female. See Woman.
 FEMERN, island, IX. 501.
 FEMININE, in grammar, IX. 501; X. 747.
 FEMME COVERT, in law, IX. 501.
 Femur, or thigh-bone, III. 34, 36—in the mammalia, 82—in birds, 86—in reptiles, 88.
 FEN, IX. 501; II. 362; IV. 567—fen country of Cambridgeshire, VI. 114—of Lincolnshire, II. 363; XIII. 491—of Suffolk, XX. 790.
 FENCES, IX. 501; II. 269—in hunting, XI. 678—for gardens, 698; XVII. 773.
 FENCE-MONTH, IX. 501.
 FENCING, IX. 501.
 FENELON (F. de S. de Lamotte), IX. 505—his works, I. 83—his character contrasted with that of Bossuet, 351—his controversy with Bossuet, ib., V. 60; XV. 758—his character, I. 83, 351—why distrusted by Louis XIV., ib.—his adoption and defence of Madame Guyon's opinions, XI. 163; I. 352—his banishment from the court, and condemnation by the pope, ib.
 Fenestrella, XVII. 98, 96.
 Fennec, in zoology, XIV. 165.
 Fennel, V. 137, 195; XI. 745.
 FENTON (Sir Geoffrey), IX. 509.
 —(ELIJAH), English poet, IX. 509—his share in Pope's version of the Odyssey, XVIII. 330.
 Fenugreek, yellow dyestuff, VIII. 297.
 FEOD, or Feud, IX. 509. See Feudal law.
 Feodor, reign of, XIX. 476.
 —Ivanovitch, XIX. 474.
 FEOFFMENT, in law, IX. 509.
 Ferae, order of mammalia, XIV. 135, 146.
 FERALIA, Roman festival, IX. 509.
 FERDINAND, IX. 510.
 —Prince of Saxe-Coburg, XVIII. 390.
 Ferdinand and Isabella, IX. 510; XX. 465—their agreement with Columbus, VII. 157—their expulsion of the Jews from Spain, XII. 781—Prescott's history of, XVIII. 503, 504.
 —II., emperor of Austria, IV. 303.
 —IV., king of the two Sicilies, XX. 260, 264.
 —III., king of Leon, XX. 463.
 —IV., of Castile and Leon, XX. 463.
 —VI., of Spain, XX. 471.
 —VII., of Spain, XX. 472.
 Ferdousi. See Firdusi.
 FERÈ (La), French town, IX. 510.
 FERENTARI, Roman troops, IX. 510; III. 631.
 FERENTINUM, Etrurian city, IX. 510.
 —a city of the Hernici, IX. 510.
 FERETRIUS, surname of Jupiter, IX. 510.
 FERG (Francis Paul), IX. 510.
 Ferghana, XIII. 77.
 Fergus, river, VI. 753.
 FERGUSON (Adam), LL.D., IX. 510—on the history of language, I. 176—on Dr Reid's works, 219, *n.* 1.
 —(JAMES), IX. 512.
 —(ROBERT), poet, IX. 512.
 —(Robert), "the plotter," VII. 631.
 —(Robert), of Raith, his observations on subterranean temperature, VI. 768.
 Fergusonite, mineral, XV. 110.
 Fergusson (Mr), on Assyrian architecture, III. 501, 502—his restoration of a Ninevite palace, XVI. 277.
 FERLÈ, IX. 513—Latinæ, ib.
 FERISHTA (Mohammed Casim), IX. 513.
 FERMANAGH, IX. 513—effects of the cottage-system in, VII. 431—land under crop, XII. 516—cereal produce, 517.
 FERMAT (Pierre de), IX. 516, 671—his method of drawing tangents to curves, I. 561—on refraction, 628—his edition of Diophantus, II. 483—his disputes with Descartes, VI. 279—on probability, XVIII. 588.

FER—FEU

FERMENTATION, IX. 517—panary, IV. 380—in brewing, V. 329—in distillation, VIII. 49—influence of electricity on, 597—combustion from, XIV. 427—in wine-making, XXI. 883, 888, 889.
 FERMO, Italian city, IX. 517—delegation of, XVII. 243.
 FERMOY, town in Cork, IX. 517.
 Fern order of plants, V. 216. See Ferns and Filices.
 FERN ISLANDS, IX. 517.
 Fernand (John), blind author, IV. 799.
 FERNANDO DE NORONHA, island, IX. 517.
 FERNANDO Po, island, IX. 517; II. 229; IV. 653.
 Fernel, measurement of arc of meridian by, I. 618; IX. 548.
 —JEAN (François), physician, IX. 518; XIV. 459.
 FERNEY, village in Gex, the residence of Voltaire, IX. 518; XXI. 660.
 FERNS, IX. 518; V. 143, 216—tree-ferns, 84—their proportion to phænogamous plants, XVII. 626—work on, in nature-printing, XVIII. 555—in Cape Verde Islands, XXI. 544—fossil, V. 234. See Filices.
 FEROE ISLES, IX. 518. See Faroe.
 FERONIA, goddess, IX. 518.
 —genus of insects, IX. 90.
 Feroniens, section of coleoptera, IX. 92—synoptical table of, ib.
 FEROZEPOOR, town in Hindustan, IX. 518.
 FEROSHESH, in Hindustan, IX. 518—battle of, ib.; V. 670; XI. 509.
 FEROZPOOR, town in Hindustan, IX. 518.
 Ferrar, on the "palatines" of Ireland, XII. 511.
 FERRARA, city in the Papal States, IX. 518—legation, XVII. 243—library of, XIII. 413—university of, XXI. 492.
 Ferrari (Lewis), his discoveries in algebra, II. 485—on equations, IX. 306.
 FERRARS (George), IX. 519.
 Ferrerius (J.), V. 254, *n.* 1.
 FERRET, IX. 519; XIV. 157.
 —in glass-making, IX. 519.
 Ferreus (Scipio), his improvements in algebra, II. 484.
 Ferriar (Dr), on apparitions, III. 316 *et seq.*—on Sterne's plagiarisms, XX. 693.
 Ferric acid, VI. 489.
 Ferrier (Prof.), Coleridge accused of plagiarism by, VII. 111—on the Pythagorean doctrine of number, XVII. 232, *n.*—(Miss), her novels, XIX. 283.
 —(Mr), his account of Persia, XVII. 419 *et seq.*
 FERRO, one of the Canary islands, IX. 519; VI. 167.
 Ferrocyanic acid, calico printing with, VIII. 319.
 FERROL, town in Spain, IX. 519—harbour of, X. 372.
 Ferrottype, XVII. 550.
 FERULA IX. 519—F. Græca, plant, VII. 610.
 Ferussina, fossil mollusks, XVII. 110, 111.
 Ferussac (Baron), on the mollusca, XV. 327 *et seq.*, 373.
 Fersalite, river, VIII. 813.
 FESCENNINI, IX. 519—place whence Fescennine verses received the name, 360.
 FESS, in heraldry, IX. 519; XI. 328.
 FESTI DIES, IX. 519.
 Festiniog, in Wales, XIV. 543, 544.
 Festival. See Feast.
 FESTOON, in architecture, IX. 519.
 FESTUS (Sextus Pompeius), IX. 519.
 FETHARD, town in Ireland, IX. 519.
 FETIALES, or Feciales, IX. 520; VI. 756.
 FETICHE, IX. 520; VII. 246.
 FETLOCK, IX. 520; XI. 641, 648 *et seq.*
 Fettbol, mineral, XV. 84.
 FEU, in Scots law, IX. 520.
 FEUD, IX. 520.
 FEUDAL LAW, IX. 520—Sir Thomas Craig on, VII. 478.
 —system, XV. 681—origin of the, IX. 520—agriculture under the, II. 251—armies, III. 635—effect of the crusades on, VII. 531; II. 251—its influence on poetry, XVIII. 107—origin

FEU—FIE

- of prisons from, 566—present system of taxation arose out of the decline of, XXI. 37.
- Feuillants, X. 66.
- FEVER, IX. 526; XVII. 690—prevalence of, in marshy districts, IV. 184—at Gibraltar, X. 619—Dr Rush on yellow fever, XIX. 466—fever in veterinary science, XXI. 555.
- Faversham. See Faversham.
- FEVRE (Tannegui Le), IX. 526.
- FEZ, in Africa, IX. 526; XV. 595.
- FEZZAN, in Africa, IX. 527; II. 219.
- Ffennell (Mr), on Irish fisheries, IX. 620, 622.
- Flacre, VII. 42.
- FLARS PRICES, IX. 532—in Edinburghshire, VIII. 409.
- Fiber, genus of mammalia, XIV. 183.
- FIBRE, IX. 533—fibres of the human body, II. 777—vegetable, V. 69; IX. 655; chemical properties of, VI. 515, 516—colours of fibres, XVI. 622—fibres for micrometers, XIV. 744—tissues of, XVII. 652.
- textile. See Textile Fibres.
- FIBRIN, IX. 533, 757—liquid, II. 780—its qualities as an aliment, VIII. 18.
- Fibrine (animal), II. 381; IX. 757; XVII. 654; XIX. 610.
- (vegetable), II. 381; VI. 519; XIX. 610.
- Fibro-cartilage, II. 832—of the vertebrae, III. 5.
- Fibroferrite, XV. 97.
- Fibrolite, mineral, XV. 86.
- Fibrous system of the human body, II. 824, 825.
- tissues of animals, III. 171; XVII. 652—strength of fibrous bodies, XX. 755.
- FIBULA, IX. 533; III. 35, 36, 37—in the mammalia, 82—in birds, 86—in reptiles, 89.
- FICHTE (Johann Gottlieb), IX. 533; XI. 282—his system of philosophy, XIV. 606—his classification of duties, XV. 565—on lies of necessity, 572—on the meaning of the pronoun I, I. 200.
- FICHTELGEBIRGE, mountains, IX. 536; X. 583.
- Fichtelite, mineral, XV. 125.
- FICINO (Marsilio), IX. 536—his versions of Plato and Plotinus, XVII. 522.
- Ficoideæ, nat. order of plants, V. 194.
- FICTION, IX. 537—works of. See Novel, Romance.
- Ficula, genus of mollusks, XV. 387—*F. lævigata*, ib.
- FICUS, genus of plants, IX. 536; V. 206.
- FID, IX. 537.
- FIDDES (Richard), IX. 537.
- FIDDLE, IX. 537. See Violin.
- FIDE-JUSSOR, IX. 537.
- FIDEI-COMMISSUM, IX. 537.
- Fidele (Fortunato), on legal medicine, XIV. 422.
- FIDENÆ (now Castel Giubileo), IX. 537.
- FIDES, IX. 537.
- Fieber (F. X.), his works on insects, IX. 23.
- FIEF, IX. 538. See Fee.
- FIELD (JOHN), IX. 538.
- in heraldry, IX. 538; XI. 324—in numismatics, XVI. 353.
- MARSHAL, IX. 538; XIV. 318.
- OFFICERS, IX. 538.
- (H. W.), his assaying furnace, III. 769.
- artillery, III. 688.
- of the cloth of gold, VIII. 698.
- operations in trigonometry, XXI. 346.
- Field-fare, bird, XVI. 751—shooting of, XX. 216.
- Field-sports, their influence on the character, XII. 23; and on the health, ib.
- Field-works, IX. 805, 808.
- FIELDING (Henry), IX. 538—his criticism on the law of evidence, 418—his tomb at Lisbon, XIII. 507—on the causes and impunity of crime, XVIII. 192—his plan of police, ib.—merits of his novels,

FIE—FIL

- XIX. 272—his strictures on Richardson, 159.
- Fierasfer, genus of fishes, XII. 268.
- FIERI FACIAS, in law, IX. 543.
- Fieschi, his plot, trial, and execution, X. 211.
- FIESOLE, Italian city, IX. 543, 467.
- FIFE, musical instrument, IX. 543.
- FIFESHIRE, IX. 543—ferries on the Forth, 796—agricultural statistics, XIX. 796, 797, 798—population, 799—trigonometrical survey of, XXI. 333.
- FIFTH-MONARCHY-MEN, IX. 546; V. 416; XIII. 165.
- FIGEAC, French town, IX. 546.
- Figget whins, irrigation of, XII. 620.
- Fighting fish, XII. 289.
- Figites, genus of insects, IX. 192.
- Fig-marigold order of plants, V. 194.
- Fig-shells, XV. 387.
- Fig-tree, IX. 536; V. 206—culture of, XI. 708—fig-house, 729.
- Figs, IX. 536—value of imports of, VIII. 734.
- FIGUEIRA, Portuguese town, IX. 546.
- Figueiredo (Jorge de), V. 280.
- FIGUERAS, Spanish town, IX. 546.
- Figure, perception of, XIV. 573. See Form.
- FIGURE OF THE EARTH, IX. 547; III. 805, 812; IV. 5; VII. 700; I. 617, 836, 850, 853; X. 465, 479—no accurate information of, derived from antiquity, I. 617—attempt of Eratosthenes to measure an arc of meridian, ib.—first modern measurement of any accuracy by Snellius, 618—measurement of an arc by Norwood, Fernel, and Picard, ib.—Richer's observation that a pendulum vibrates slower at the equator, 619—explanation of this by Newton and Huygens, ib.—determination of, by Newton, 677—measurements by Cassini and Fontenelle, 685—Maclaurin's view of, 772—measurement of degrees of latitude under the equator and within the arctic circle, 772, 773; V. 243; VII. 229; I. 853, 854—measurement of a degree of latitude by La Caille, 774; by Delambre, Mechain, &c., 775—various estimates of the amount of depression at the poles, 776—measurement of a perpendicular to the meridian by Broussaud, ib.—as determined by the pendulum, ib., 850, 851—Ivory's estimate of the earth's ellipticity, 777—analytical investigation to determine the earth's figure by Clairaut, Legendre, and Laplace, ib.; III. 812—the demonstration completed by Ivory, I. 777—discussions on the earth's figure led to an examination of the theory of the tides, 778—French arc of meridian, 836—English arc, 837—connection of gravity and the figure of the earth, 851—Indian arc, 853—Russian arc, 854—various proofs of its ellipticity, ib.—Frisi on, X. 312. See Trigonometrical Survey.
- Figure-stone, XV. 84.
- Figure-weaving, XXI. 780, 785, 787.
- Figures, in geometry, X. 507—proportions of, 519.
- in rhetoric, XIX. 132; VII. 220.
- Figwort, order of plants, V. 202.
- Fiji islands, XVIII. 273. See Feejee.
- FILAMENT, IX. 576—in botany, V. 118, 126—filamentous tissue of the human body, II. 777, 786. See Fibre.
- FILANGIERI (Gaetano), political economist, IX. 576; I. 237; XXI. 582.
- (General), his expedition against Sicily, XII. 657.
- Filaria, genus of entozoa, XXI. 981—in the domestic animals, 574, 578.
- FILBERT, IX. 577; XVI. 395—in Kent, XIII. 67. See Hazel.
- FILE, IX. 577—file-cutters, diseases of, XX. 98.
- File-fish, teeth of, XVI. 421.
- FILIAL PIETY, IX. 577—duties, XV. 568.
- FILIBEG, IX. 578.
- FILICAJA (Vincenzo da), poet, IX. 578; XVIII. 112.

FIL—FIR

- Filices, or ferns, nat. order of plants, V. 216—organs of reproduction in, 143—embryogeny in, 156.
- FILIGREE, IX. 579—work, of Sumatra, XX. 805.
- FILIPPO D'ARGIRO (San), town in Sicily, IX. 579.
- Filistata, genus of arachnides, III. 378.
- Fillagree. See Filigree.
- FILLET, IX. 579—in architecture, III. 509—in joinery, XII. 808.
- Fillmore (Millard), president of the United States, XXI. 442, 796.
- FILTER, IX. 580.
- FIN, IX. 583; III. 90; XII. 206, 215—in fossil fishes, 333—in the cetacea, XIV. 216.
- FINAL CAUSE, IX. 583; III. 540; XVII. 803.
- FINALE, Genoese port, IX. 583.
- FINANCES, IX. 583.
- Finati (Giovanni), on Arabian ballad-singing, IV. 396.
- FINCH (Heneage), earl of Nottingham, IX. 583.
- (Sir John), V. 393.
- tribe of birds, IX. 583; XVI. 761.
- Fincham, on ship-building, XIX. 161, 163—on the seasoning of timber, 168—strength of timber, 172.
- FINDHORN, river, IX. 583; XV. 576, 772.
- FINE, in law, IX. 583.
- FINE ARTS, IX. 584—exhibition of works in the, 453. See Arts, Painting, Sculpture, &c.
- Financing. See Veneering.
- Finfoots, birds, XVI. 809.
- FINGAL, king of Morven, IX. 584; XII. 464; XVII. 5, 6.
- in Tasmania, gold found at, XXI. 32.
- FINGAL'S CAVE, IX. 584; XV. 190; XX. 528.
- Finger-alphabet, VII. 679.
- Fingers, bones of, III. 38—joints of, 34—muscles, 38—motions, 40—opposition of the thumb to, 41—calculation by, II. 8—cases of supernumerary, XV. 503.
- and toes, a disease of turnips, II. 319; V. 78—effects of lime on, II. 319.
- FINIAL, IX. 584; III. 509.
- FINISTÈRE, or Finisterre, in France, IX. 584; V. 316.
- Finlaison (John), his tables of mortality and annuities, III. 204; XII. 401—on mortality, XV. 614.
- FINLAND, IX. 584—ceded to Russia, XIX. 494; XX. 859—poetry and mythology of, XIX. 701—education in, 532—crime, 525, n. 2—tables of mortality, XV. 645, 646, 647. See Finns.
- GULF OF, IX. 585; IV. 402, 404.
- Finlayson's harrow and grubber, II. 272.
- Finmark, XIII. 233—Laplanders of, 237.
- Finnan haddocks, IX. 647, 769; XIII. 89.
- Finns, VI. 364; IX. 388; XIII. 237; XIX. 522; XX. 864.
- Finnish language, IX. 389, 390; XIII. 215—has many words in common with the American languages, II. 680, n.
- Finsbury, borough of, XIII. 660.
- Finzel (Mr), on sugar-making, XX. 794, 795.
- Fiords, XVI. 319—in Lapland, XIII. 235—Finland, IX. 584—Scotland, XIX. 794.
- FIORENZUOLA, Italian town, IX. 585.
- FIR, IX. 585—pollen, V. 129; seed, 139; embryo, 142; cone, 139—propagation of, by seed, XVII. 767—trees, 756, 760; culture of, 770—distinction between firs and pines, XXI. 274.
- Balm of Gilead, V. 209.
- tribe of plants, V. 209.
- Fir-rape, order of plants, V. 198.
- Fir-timber, XXI. 274—Scotch fir, 275—spruce, ib.—sapwood in, ib.—defects of, ib.—its use in joinery, XII. 817—specific gravity of, 89—frigate built of, XVI. 101—mode of preserving, XX. 168—shrinkage in seasoning, ib.—strength of, 171, 172, 757, 758.
- FIRDUSI, Persian poet, IX. 585; XVII. 429, 433.

FIR—FIS

- FIRE, IX. 586—natural fire at Baku, IV. 382; wild or Greek, IX. 586—domestic fires, XX. 353—great fire of London, V. 424; XIII. 659; in Rome, XIX. 361—of St Elmo, VIII. 588—security of buildings against, VII. 329. See Combustion, Flame, Heat.
- Insurance, XII. 416—offices, 417—duties paid by, in 1855, 418—its progressive increase, ib.—practice of, ib.
- of artillery, different kinds of, XI. 141.
- St ANTHONY'S, IX. 587, 329. See Erysipelas.
- Fire-annihilator, XIII. 438.
- FIRE-ARMS, IX. 587—effect on war of the great improvements in, XXI. 725. See Gunmaking.
- FIRE-BALLS, meteors, IX. 586; VIII. 587.
- Fire-bricks, V. 345.
- Fire-clay, XV. 142—analysis of, II. 391.
- FIRE-DAMP, IX. 587; VI. 643, 671; XIV. 436—explosions in collieries from, VII. 124.
- FIRE-ENGINE, IX. 587; XII. 177—in London, XIII. 679—fire-engine companies, in New York, XVI. 231.
- FIRE-ESCAPES, IX. 587; XIII. 437.
- FIRE-FLIES, IX. 587, 169—in Jamaica, XII. 682.
- Fire-opal, mineral, XV. 69.
- Fire-ordeal, XVI. 701.
- Fire-places, XIX. 613. See Chimney, Furnace, Smoke.
- Fire-raising, or arson, III. 679; XIV. 427.
- Fire-stones, XX. 712.
- FIRE-WORKS, IX. 587. See Pyrotechny.
- FIRE-WORSHIPPERS, IX. 587; XI. 79, 92; XVII. 428.
- Fireblende, XV. 122.
- FIRKIN, a measure, IX. 587.
- FIRLOT, a measure, IX. 587.
- FIRMAMENT, IX. 587.
- FIRMAN, IX. 587.
- FIRMICUS (Maternus Julius), IX. 588.
- Firmness, faculty of, XVII. 563.
- Firola, genus of mollusks, XV. 377.
- Firolidae, family of mollusks, XV. 377.
- Firoloides Lesneuri, XV. 378.
- FIRST-FRUIT, IX. 588.
- Firths, comparative amount of river and tidal water in, XVI. 82.
- Fisc, in civil law, IX. 588.
- Fischer (L. H.), his work on insects, IX. 14, 24.
- (T. B.), his work on insects, IX. 14.
- Fischerite, mineral, XV. 74.
- FISH, IX. 588—acuteness of their hearing, II. 99—killed in Lapland by striking the ice, 100—as manure, 407—as an article of food, IX. 763—teeth of fishes, XVI. 420—ejected from volcanoes, III. 129—poisonous species, XIV. 439; IX. 763—rearing of, in ancient Egypt, VIII. 427—luminousness of, XIII. 457—electricity of, VIII. 530; XVII. 636, 671—
- in heraldry, XI. 331, 333—supply to the London market, IX. 649—crystalline lenses of, XIV. 771—preserved in glycerine, X. 685—figures of, borne on arms, XI. 333—oil from, XVI. 493—fishes without teeth, 494—of Africa, II. 218—America, 714—New South Wales, 281—Canada, VI. 143—Madeira, XIII. 800—Antrim, III. 285—Devonshire, VII. 763—Hungary, XII. 17—Jamaica, 682—India, XI. 456—Iceland, XII. 203—Java, 705—Sweden, XX. 862—number of fishes known, XVII. 631—distribution of, 634—food of, 635—fossil, 640, 115 *et seq.*—mode of fecundation, 683. See Ichthyology.
- FISHER (John), bishop, IX. 588; VIII. 700.
- fur-skinned animal, X. 347.
- FISHERIES, IX. 589—of Aberdeen, II. 33—America, V. 480—Antrim, III. 286—Argyllshire, 526—the Baltic, IV. 404—Banffshire, 413—Brazil, V. 299—Berwickshire, IV. 680—Caithness, VI. 62—Canada, 143—Caspian Sea, 312—Ceylon, 395—Chile, 550—China, 586—Clare, 755—Cornwall, VII. 408—Donegal, VIII. 105—Dorsetshire, 112—Downshire, 123

FIS—FLA

Dublin, 215—England, 727—Firth of Forth, IX. 794, 795—France, X. 264—Holland, XI. 586—Ireland, XII. 522—Italy, 639—Japan, 690—Labrador, XIII. 140, 141—Lapland, 241—Lewis, 352—Malta, XIV. 115—Mayo, 371—Hebrides, XI. 278—New Brunswick, XVI. 163—New York, 220—Norway, 327—Newfoundland, 171; V. 482—Nova Scotia, XVI. 344—of the Orkney Islands, 721—Holland, XI. 583—of Peterhead, XVII. 484—Prince Edward's Island, XVIII. 518—Ross-shire, XIX. 427—Scotland, 804—Shetland, XX. 114—Sligo, 331—Sutherland, 842—Tuscany, XXI. 394—Vancouver's Island, 520—Waterford, 770—Wexford, 847—Wick, 857—Wicklow, 858—Yarmouth, 953. See Herring, Cod, Salmon, &c., Pearl and Whale Fishery.

Fish River, Great, XVIII. 172, 175.

Fisheries for crustacea, VII. 540.

Fisherrow, XV. 744.

FISHERY, PEARL, IX. 650. See Pearl-fisheries.

— WHALE, IX. 650. See Whale-fishery.

FISHGUARD, Welsh town, IX. 650.

FISHING, IX. 650. See Angling, Fisheries.

— in carpentry, VI. 263.

Fishing-frog, XII. 311.

Fishing-nets, XIX. 89 *et seq.*; IX. 609 *et seq.* See Nets.

Fishing-rod, III. 150.

Fissilabra, section of insects, IX. 103.

Fissipedes, subdivision of crustacea, VII. 542.

FISSIROSTRES, family of birds, IX. 650; XVI. 757.

Fissurella, genus of mollusks, XV. 380.

Fissurellidae, family of mollusks, XV. 380—fossil, XVII. 111.

Fissures in rocks, XV. 171, 174.

FISTULA, IX. 650; XX. 833—of the withers of animals, XXI. 558.

Fistularia, genus of fishes, XII. 305—fossil, 344.

— zoophytes, XXI. 985.

Fistulida, echinoderms, XXI. 983, 984.

FITCH, a kind of vetch, IX. 650. See Vetch.

— or polecat, X. 348.

FITCHY, in heraldry, IX. 650; XI. 329.

Fits in the domestic animals, XXI. 574.

Fitton (Dr), his encomium on Dr Wollaston, XXI. 901.

Fittri, African lake, II. 215, 229.

FITZ, IX. 650.

Fitzgerald (Lieut. Gov.), his reports on Western Australia, IV. 300.

— (Prof.), on Bishop Butler, VI. 29 *et seq.*

— (Lord Thomas), his attack on Dublin, VIII. 218.

— (Vesey), V. 652.

Fitzharris, Irish adventurer, V. 431.

FITZHERBERT (Sir Anthony), IX. 650.

— his works on agriculture, II. 254, 255.

— (Mrs), V. 522.

FITZJAMES (James), IX. 650. See Berwick, Duke of.

Fitznigel (Richard), on the Exchequer, II. 7.

Fitzroy (Sir C. Augustus), governor of New South Wales, IV. 274.

— (Captain), on the canal across the Isthmus of Panama, II. 711, 712—on Patagonia, XVII. 335.

FITZSTEPHEN (William), IX. 650.

Fiumara, outlet of the Tiber, XVII. 240.

Fiume, in Austria, IX. 650.

Fiumicino, outlet of the Tiber, XVII. 240.

FIXED AIR, IX. 650; VI. 471. See Carbonic acid gas.

— stars, IV. 379. See Stars.

FIXITY, in chemistry, IX. 650.

FIXMILLNER (Placidus), astronomer, IX. 650.

Fizeau (M.), on the velocity of light, XVI. 550, 552.

Flabellina, fossil shells, XVII. 94.

Flabellum, fossil corals, XVII. 97.

FLA—FLE

FLACCUS (Caius Valerius), Roman poet, IX. 651—Burman's edition, V. 786.

— (Valerius), XIX. 321.

— (Verrius), XVII. 519.

Flacourtiaceæ, nat. order of plants, V. 183.

FLAG, IX. 651; II. 142—naval signals by means of flags, XVI. 108; XXI. 94; XX. 24, 25—to strike the, to heave out, to hang out the white, IX. 651.

— OFFICERS, IX. 651; II. 142; XVI. 102—full and half pay of, 109, 113—prize-money, 114.

FLAGELLANTS, fanatics, IX. 651.

Flagellations at Sparta, VII. 800.

FLAGEOLET, IX. 652; XV. 710.

FLAIL, IX. 652.

FLAMBEAU, IX. 652.

FLAMBOROUGH-HEAD, IX. 652.

FLAME, IX. 652; IV. 791—of a candle, VI. 171—lines in the spectra of different flames, XVI. 592—electricity of, VIII. 567—Sir H. Davy's researches on, I. 969. See Fire, &c.

FLAMEN, IX. 652.

FLAMINGO, IX. 652; XVI. 808.

FLAMINIA VIA, IX. 652; XIX. 228, 308.

FLAMINIUS (C.), IX. 652—Circus of, VI. 734—defeat at Thrasymentus, 294; XI. 209; XIX. 310.

— (T. QUINTUS) IX. 652; XIX. 312.

Flamma (M. Calpurnius), VI. 288.

FLAMSTEED (John), IX. 652—his improvements in practical astronomy, III. 803—on the pole star, II. 36—his catalogue of stars, IV. 80, 95—on the longitude, XIII. 686—his projection, X. 493—Newton's opposition to, IX. 674—his attacks on Newton, XVI. 210—Sharp's assistance to, XX. 92, 93—on wheels, XVIII. 753—on iron beams, XX. 177, 178.

FLANCH, or Flange, IX. 654.

Flanches, in heraldry, XI. 330.

FLANDERS, IX. 654—commerce of, VII. 187—manufacture of sal-ammoniac in, II. 721. See Flemish, Holland, Belgium, France.

— (Guy), earl of, X. 14.

— Moss, in Perthshire, XVII. 458.

Flandrians, or Flemingians, sect, XIV. 501.

Flange. See Flanch.

Flanking, in fortification, IX. 801.

FLANNAN ISLANDS, IX. 654.

FLANNEL, IX. 654.

FLAT, in music, IX. 654; XV. 706, 707.

Flat-fish, XII. 225; IX. 648, 764—fossil, XVII. 128.

Flaugergues, on the oscillation of waves, XII. 72.

FLAVEL (John), IX. 654.

Flavian dynasty in Rome, XIX. 339—341.

FLAX, IX. 655; V. 187—culture of, II. 332; in Antrim, III. 285; France, X. 247, 253; Belgium, IV. 625; Prussia, XVIII. 666—trade in Yorkshire, XIV. 288—manufacture in Montrose, XV. 524—breadth cultivated in Ireland, XII. 518—flax-spinning in Fife, IX. 545—bleaching of, IV. 768—preparation of, for making thread, XIII. 494—dyes worse than wool and silk, VIII. 274—watering of, 278—structure of, ib.—dyeing of, ib.—in rope-making, XIX. 401—spinning of, XX. 511—quantity imported, VIII. 734. See Hemp, Linen.

— cotton, IX. 656.

— New Zealand, V. 212; XI. 313; XVI. 233.

— order of plants, V. 187.

— purging, V. 187.

FLAXMAN (John), IX. 657—on painting among the Greeks, XVII. 51—his character as a painter, 80; as a sculptor, XIX. 864—on sculpture, 853 *et seq.*

Flea, IX. 260—its agility, XX. 770—modes of killing, XXI. 550—fleas on the domestic animals, 579.

FLEAM, IX. 658.

FLECHE (La), French town, IX. 658; XX. 647.

FLÉCHIER (Esprit), IX. 658.

FLECKNOE (Richard), IX. 659.

FLE—FLO

FLEECE, IX. 659—varieties of wool in a single, XXI. 905—yolk of, ib.—colour, ib.—weight, 906—South Down, ib. See Wool.

— ORDER OF THE GOLDEN, IX. 659; XIII. 116.

FLEET, IX. 659—ordinary division of, XXI. 719—evolution of, 720 *et seq.* See Navy.

— (Loch), bar at, XVI. 80.

— PRISON, IX. 660; XIII. 678.

FLEETWOOD, in Lancashire, IX. 660.

— (CHARLES), IX. 660.

— (WILLIAM), IX. 660.

Flegrean fields, XX. 236.

Fleming (Dr), on the fall of the leaf, V. 110—his History of British Animals, XVI. 733—on the geology of Perthshire, XVII. 458.

— (Mr), on pine-apple pits, XI. 730.

FLEMISH LANGUAGE, IX. 660—bibles, IV. 702—agriculture, II. 252.

— school of painting, IX. 660; III. 710; XVII. 74.

Flemming, poetry of, XVIII. 118.

FLENSBOURG, Danish seaport, IX. 660.

Fleschier (J.), on the rainbow, XVI. 526.

FLESH, IX. 660—its structure, II. 821—as manure, 407—its nourishing qualities in different classes of animals, III. 179. See Muscle.

FLETA, a treatise on English law, IX. 661.

FLETCHER (Andrew), of Saltoun, IX. 661; XI. 178—the Darien project encouraged by, VII. 657.

— (Dr), on theology, XXI. 192 *et seq.*

— (GILES and PHINEAS), poets, IX. 662.

— (JOHN), IX. 662; IV. 533—dramatic works of, VIII. 159.

FLETEWOOD (William), IX. 662.

Fleurant (M.), aéronaut, II. 177.

FLEUR-DE-LIS, in heraldry, IX. 662; XI. 326, 335.

FLEURY (André Hercule de), cardinal, IX. 662; X. 35.

— (CLAUDE), IX. 662.

FLEURUS, town in Belgium, IX. 663.

FLEXOR MUSCLES, IX. 663; III. 38, 39.

Flexure, propositions relating to, VI. 251; of beams, I. 875.

Fleyder on the art of flying, II. 167.

Flibustiers, X. 303.

Flight and Robson (Messrs), their Apollonicon, XVI. 713.

FLINDERS (Mathew), IX. 663; X. 295—his discoveries in New Holland, IV. 253, 254—on the coral reefs of New Holland, 269.

FLINT, IX. 663; XV. 69, 147—marine, 144—specific gravity of, XII. 88—in chalk, XV. 211—preparation of, for pottery, XVIII. 410—employed in building, XX. 712.

— glass, IX. 663—manufacture of, X. 672; for telescopes, XX. 121.

— Welsh town, IX. 663.

FLINTSHIRE, IX. 663—lead mines of, XV. 246—population and value of property, VIII. 754.

Flinty slate, XV. 69.

FLIP, a kind of drink, IX. 664.

Float, XII. 142.

Float-ore, XV. 222.

Floating, means of, XIII. 439, 440.

— anchor, III. 118.

— bodies, stability of, XX. 152.

— iron batteries, XX. 138.

— lights, XIII. 471, 482.

FLODDEN FIELD, IX. 664—battle of, VIII. 114, 698; XIX. 766—"The Flowers of the Forest," a song occasioned by, VIII. 119—Selkirk men present at, XX. 40.

Floe, XVII. 584.

Flogging, punishment of, XIV. 445—in the navy, XVI. 104.

FLOOD, IX. 665. See Deluge.

— (Mr), XII. 496; XI. 2—his motion on parliamentary reform, in 1790, V. 536.

Floodgates, XIX. 221.

FLOOR, IX. 665—construction of, V. 747, 748; XII. 812—measurement of floor-

FLO—FLU

ing, V. 749—in the houses of Pompeii and Herculaneum, III. 472—modes of rendering them fire-proof, XIII. 438, 439; VII. 331.

Floors, in ship-building, XX. 186, 194.

FLORA, IX. 665—circus of, VI. 734.

— in botany, IX. 665—of the British Isles, 774—of Orkney, XVI. 719.

— planet, IV. 91.

FLORALES LUDI, IX. 665.

Floral games, academy of, II. 61.

FLORENCE, IX. 665; XII. 649, *et seq.*; XXI. 396—academies at, II. 70—Acad. della Crusca, VII. 536 (see Crusca)—libraries, XIII. 414—cathedral, III. 450—Dolomieu on the figured stones of, VIII. 95—glass, IV. 456—power of the Medici at, XIV. 447—school of painting, XVII. 62 *et seq.*—early printing, XVIII. 533—railway from, to Leghorn, XXI. 395—university, 492—varnish, VIII. 812.

— old English gold coin, IX. 666.

Florentine academicians, the first to use a dense fluid instead of air in thermometers, I. 756.

— marble, VI. 735.

FLORES, island, IX. 666.

— one of the Azores, IV. 336.

FLORIAN (J. Pierre Claris de), IX. 666.

FLORIDA, IX. 666; XXI. 419—Indians of, II. 680—Florida Indian divers, VIII. 57—newspapers of, XVI. 195—debt of, XXI. 428—early settlers in, 432—purchased from Spain, 440.

Florideæ, seaweeds, reproductive organs of, V. 148.

Florida, Italian algebraist, II. 484.

FLORIN, IX. 668; XV. 441, 442 *et seq.*—in Germany, XV. 436.

FLORINIANI, Gnostic sect, IX. 668.

FLORIS (Franz), Flemish painter, IX. 668.

Florists' flowers, XI. 750.

FLORUS (Lucius Annaeus), IX. 668.

— (Gessius), XII. 772.

Flos ferri, XV. 92.

Floss silk, XX. 279, 290.

Flotation, XII. 83.

FLOTSAM, IX. 668.

Flounder, family of fishes, XII. 271; IX. 764.

Flour, IV. 379—constituent parts of wheat flour, ib.—adulteration of, XIV. 441.

— (St), French town, IX. 669.

Flourencourt on mortality, XV. 634.

FLOWER, IX. 669; V. 117—symmetry and morphology of, 117—odours of, 152—colours of, 151—florists' flowers, XI. 750—preserving of, IX. 669.

Flower-garden, XI. 745—calendar, 758.

Flower-stalk, V. 113—bud, 121.

Flowering, periods of, V. 149.

Flowering-rush order of plants, V. 214.

FLOYD (Dr), on the river Euphrates, IX. 376.

FLUDD (Robert), IX. 669—on animal magnetism, XX. 415.

Fluellite, mineral, XV. 93.

Flues of chimneys, V. 734—of steam furnaces, XX. 589 *et seq.*

Fluidity, XI. 269—of air, XVIII. 28.

FLUIDS, IX. 669; XII. 77—compressibility of, II. 102—of animal bodies, 771, 778—clarification of, VI. 755—propagation of heat through, 777; XI. 261—cohesion of, VII. 56, 464; XII. 90—pressure and equilibrium of, 78—experiments with two, 102—motion of, 71, 72, 103—experiments on the motion of, 111—influence of heat on the motion of, 145—resistance of, 159; I. 886; XIX. 192 *et seq.*; XX. 158—friction of, I. 886—oscillation of, XII. 162—viscosity of, I. 887—weight of, XIV. 417—expansion of, by heat, XI. 268—their conversion into vapour, 270, 271—boiling point of, 271—refractive power of, XVI. 558—dispersive powers of, 582—circular polarisation of, 680—colours of dispersed light in, 693—motion of the surface of, XIV. 386—how obstructed in moving along canals, XVIII. 62. See Capillary Action, Hydrodynamics.

FLU—FOL

Fluke-worm, XXI. 974, 976—in sheep, 570.
 Fluoboric acid, VII. 671.
 Fluocerine, mineral, XV. 93.
 Fluocerite, mineral, XV. 93.
 Fluorescence, I. 924.
 Fluoric acid, VI. 470.
 Fluorine, VI. 470; XV. 64—in plants, V. 97, 98—in sea-water, XIX. 585.
 Fluor-spar, XV. 93—optical properties of, XVI. 676, 690, 693—in Derbyshire, VII. 755—fluorine from, VI. 470—crystallisation of, VII. 561—its phosphorescence, XIII. 457; VIII. 598—in Devonshire, VII. 763.
 FLUSHING, town in Holland, IX. 669; XXI. 602—taken by the British, V. 607.
 FLUTE, IX. 669; XV. 709.
 — in architecture, III. 509.
 Flute-mouths, family of fishes, XII. 304.
 Flute-player, Vaucanson's mechanical, III. 137.
 FLUX, IX. 669; IV. 791.
 FLUXIONS, IX. 670—discovery of, I. 635—controversy regarding the discovery, ib. 636; XVI. 206. See Calculus, Geometry (New).
 FLY, IX. 748, 221—turnip-fly, 150—wheat-fly, 226—flesh-fly, 247—gad-fly, 245—forest, 256—horse, 231—stinging, 245—natural and artificial, used in angling, III. 149, 151, 153—Tsetse fly, in Africa, II. 218. See Diptera.
 — in mechanics, IX. 748.
 — shuttle, VII. 441; XX. 509.
 FLY-CATCHER, bird, IX. 748; XVI. 749.
 Fly-fishing, III. 133, 153—rules for, 149.
 Fly-wheels, XIV. 412—in steam-engines, XX. 589.
 FLYING, IX. 748—artificial, ib.; II. 166.
 — Lemur, XIV. 150.
 FLYING-FISH, IX. 748; XII. 264, 280.
 — steam-ship, trials of screw-propellers in, XX. 660.
 Fo, or Fohi, XV. 761. See Fe.
 FOAL, IX. 748—treatment of foals, II. 339; XI. 637.
 FOCHABERS, in Morayshire, IX. 748.
 FOCUS, IX. 748; XXI. 117—extinction of volcanic foci, 606—of burning-glasses, VI. 1.
 Fodéré (M.), on the plague, XVII. 750.
 FŒTUS, IX. 748—development of nerves in, II. 816—bones of, 828—teeth, 831—dimensions and weight, III. 2—vertebræ, 5—cranial bones, 28; viz. frontal, 15; ethmoid, 16; sphenoid, 18; occipital, 19; temporal, 21—lower jaw, 24—membranes, 72—anatomical peculiarities of, 73—development of, in the dog, XVII. 685.
 Fog, or Mist, IX. 748; VII. 768; XIV. 654—strongly electric, 661—in Newfoundland, XVI. 171.
 Fog-sickness, in cattle, XXI. 566.
 FOGGIA, city of Naples, IX. 748.
 Foggio (J.), on the electricity of clouds, VIII. 581.
 Fogo, island, IX. 748; XXI. 545.
 Fohi. See Fe.
 Fohmann on the lymphatics, II. 804.
 FOHR, or Fora, island, IX. 748.
 FOIL, in fencing, IX. 748, 503.
 — in jewellery, IX. 748.
 Foissac (M.), on animal magnetism, XX. 427, 429.
 Foists, or Foysts, kind of ship, XX. 123.
 FOIX, town of France, IX. 748—province, X. 277.
 — (Earl of), VI. 613; X. 315, 30.
 FO-KIEN, or Fu-kiani, in China, IX. 749.
 FOKSCHAN, or Fokschani, in Turkey, IX. 749.
 FOLARD (Jean Charles de), IX. 749.
 FOLCLANDS, or Folklands, IX. 749.
 FOLCMOTE, or Folkmote, IX. 749.
 Folds, for sheep, II. 348.
 FOLDVAR, town in Hungary, IX. 749.
 FOLENGO (Theophilus), IX. 749—his *Macaronics*, VIII. 249.
 FOLIATING of looking-glasses, IX. 750.
 Foliations, in architecture, III. 509—foliation in rocks, XV. 154, 180.
 FOLIGNO, Italian town, IX. 750.

FOL—FOO

FOLIO, IX. 750.
 Folk's saga of Scandinavia, XIX. 691.
 FOLKES (Martin), IX. 750.
 FOLKESTONE, or Folkstone, in Kent, IX. 750—harbour at, XIII. 66—population, 67—south-eastern railway at, ib.
 FOLLICLE, in botany, IX. 750; V. 136.
 — in anatomy, II. 833, 834.
 FOMALHAUT, a star, IX. 750; IV. 79.
 Fomentation, in veterinary science, XXI. 555 and n. 2.
 Fomorian, XII. 463.
 FONDI, town of Naples, IX. 751.
 — lake, XX. 239.
 Fonseca, bay of, XV. 663.
 FONT, IX. 751—or fount of types, ib., 845. See Fount.
 Fontaine (Augustus la), character of his novels, XIX. 290.
 — (JEAN DE LA), IX. 751—his fables, 463—his poetry, XVIII. 116.
 — (M.), his account of the plans of Roman Catholic missionaries with dying children, XV. 277.
 FONTAINEBLEAU, French town, IX. 752—forest of, X. 240—palace of, ornamented by Primaticcio, XVIII. 515.
 FONTAINES (P. F. Guyot des), French critic, IX. 752.
 — turbine wheel, XII. 171.
 FONTANA (Felice), IX. 752—on the poison of serpents, XIX. 45, 70.
 — (GREGORIO), IX. 753—on the microscope, XVI. 529.
 Fontanelle, in anatomy, III. 16, 29.
 FONTARABIA, IX. 754. See Fuentarabia.
 FONTENAY, in France, IX. 754.
 FONTENELLE (Bernard le Bovier de), IX. 754; I. 156—maxim of, 23—compared with La Motte, 23, n. 2—works of, 157, 159, n. 2—aspired to be the philosopher of Parisian circles, 159—his character, 160.
 FONTENOY, IX. 755—battle of, V. 460.
 FONTEVRAULT, order of, IX. 755.
 FONTINALIA, Roman festival, IX. 755.
 Food, IX. 755—chemical composition and physical action of, ib.—animal and vegetable substances used as, 758—preparation of, 765—preservation, 766—of the American aborigines, II. 693—its relation to the teeth of animals, 774—young of animals produced when most abundant, III. 182—most needed by the young, 180—instances of abstinence from, II. 51; III. 180—its effects on health, XIV. 440—adulteration of, ib.—how to ascertain the best kinds of, XVII. 657—mode in which it forms tissues and organs, ib.—digestibility of different kinds of, 660—consumption of, in London, XIII. 664—increased supply necessary in high latitudes, XVIII. 167, n. 3—increase of, 343—its influence on life and health, XIX. 610—different classes of, ib., 611—food museum, XXI. 324. See Aliment, Cookery, Dietetics, Digestion, Fast, &c.
 — of animals, II. 418; VI. 522—circumstances which lessen the waste of, II. 420—nutritive value of different kinds of, 419—of the crustacea, VII. 539—of horses, XI. 670.
 — of plants, changes which take place in, during their growth, II. 382—composition of soils as supplying, V. 97.
 FOOLS, feast of, IX. 770—"mother of fools," order of, XIII. 122.
 Fools'-parsley, plant, V. 115.
 FOOT, human, IX. 770—bones of, III. 36—arches of, 37—muscles, 39.
 — of mammalia, bones of, III. 81—foot-rot, XXI. 563.
 — of the horse, XI. 672—its diseases, XXI. 560, 561—in mollusks, XV. 326 *et seq.*
 — lineal measure, IX. 770—its length in different countries, XXI. 804 *et seq.*
 — in prosody, IX. 770.
 Foot-guards, XI. 74.
 Foot-pound, in mechanics, XIV. 404.
 Foot-prints, in geology, XVII. 129 *et seq.*
 Foota-toro, XX. 50, 51.

FOO—FOR

FOOTE (Samuel), IX. 770—his comedies, VIII. 166.
 Footings, in laying foundations, XX. 721.
 Footman, XIII. 525.
 FORAGE, IX. 771—crops, II. 322.
 Foramen ovale, III. 46, 112.
 Foraminifera, polytypes, XXI. 1007—fossil, ib.; XVII. 93.
 FORBES (Dr), on the mortality of Penwith, XV. 617.
 — (DUNCAN), of Culloden, IX. 771.
 — (EDWARD), Prof., IX. 772—on marine zones of vegetation, V. 229, 232; XVII. 630, 636—his theory of the origin of the British flora, V. 231; and fauna, XV. 216—on specific centres of vegetation, V. 223—on the natural history of the Isle of Man, XIV. 242—his opinion as to the age of the igneous rocks near Edinburgh, XV. 190, n.—on the Purbeck beds, 208—on the distribution of fossil fishes, XVII. 640—on the echinodermata, XXI. 993, n. 4—on the ophiuridæ, 995.
 — (James David), Principal, his dissertation on mathematical and physical science, I. 799—experiments on the conductivity of iron, 952, n. 4—on the polarisation of heat, 956, 957, and n. 1; XI. 267; XIII. 454—on the glaciers of Norway, X. 634; XVI. 320—on the ablation of the ice of glaciers, 636—on the veined structure of glacier ice, ib., 639—his viscous theory of glaciers, 638, 639—on dirt-bands in glaciers, 637—on the Quæns, as distinguished from the Laplanders, XIII. 237—his visit to an encampment of Laplanders, 243—on the absorption of the sun's heat in passing through the atmosphere, XIV. 637—on the temperature of the soil, 644—on steam, as absorptive of certain rays of the spectrum, 683—on the mountains and table-lands of Norway, XVI. 320—on the waterfalls of Norway, 321—on the colours of the atmosphere, 691—of steam, 692—his account of Trondhjem, XXI. 355.
 — (JOHN), divine, IX. 775.
 — (Sir John), on the round towers of Ireland, VIII. 216—on Dublin, 227—on the mineral waters of Leuk, XV. 38—on mesmerism, XX. 437—on the deception practised by clairvoyants, 438.
 — (Mr), on the cobra di capello, XIX. 64.
 — (Mr), his estimate of the value of the woollen manufactures of the United Kingdom, XXI. 918, 919.
 — (WILLIAM), bishop of Edinburgh, IX. 776.
 — (Sir William), his *Life of Dr Beattie*, IV. 531.
 Forbin (Count), his description of the fire of St Elmo, VIII. 588.
 FORCE, IX. 777; IV. 219; VIII. 321—application of forces to solids, I. 874—forces which retain the planets in their orbits, IV. 97—which disturb the elliptic motion of the planets, 102—composition and resolution of forces, VI. 254; VIII. 334—estimation or reduction of, 340—accelerating and retarding, 347; XIV. 403; XIX. 436—inherent, VIII. 330—deflecting, 333, 356; XIV. 403, 408—central, VIII. 358—moving distinguished from accelerating, 356—law of magnetic, XIV. 4, 42—deviating forces, 403—reciprocating forces, 408—couples of, 404—forces of disturbance in geology, XV. 166—centrifugal, XIV. 409—vital forces, XVII. 656—moment of a force, XIX. 430—forces acting on a ship in motion, XX. 157, 180—electro-motive force, XXI. 94. See Dynamics, Strength of Materials.
 Forcellini (Egidio), his Latin dictionary, XVII. 526.
 FORCEPS, in surgery, IX. 777.
 FORCER, in mechanics, IX. 777.
 FORCHHEIM, in Bavaria, IX. 777.
 Forcing-garden, XI. 719.
 Forcing-pump, XII. 69, 176.

FOR—FOR

FORD (John), dramatist, IX. 777.
 — (Mr), on the libraries of Madrid, XIII. 409.
 FORDINGBRIDGE, in Hampshire, IX. 777.
 Fords, how rendered impassable in war, IX. 810.
 FORDUN (John), IX. 777.
 FORDYCE (David and James), IX. 778.
 — (GEORGE), IX. 779.
 Fore-arm, muscles of the, III. 38.
 FORE-LOCK, IX. 779.
 FORECASTLE of a ship, IX. 779; XX. 125.
 Foreign policy of the United States, XXI. 439.
 FOREIGNER, IX. 779—law regarding copy-right in, VII. 361—immigration of, XIV. 275. See Denizen, Alien.
 Forejudger, in law, IX. 779.
 FORELAND, North and South, IX. 779.
 FOREMAST, IX. 779.
 Forensic medicine, XIV. 425.
 Foreskin, III. 70.
 FOREST, IX. 779; XX. 210, n. 1—influence of climate on the distribution of forests, II. 672—of Bavaria, IV. 516, 517—Austria, 313—France, ib.; X. 240, 249—of Brazil, V. 294—of Canada, VI. 141—England, VIII. 717—of Hampshire, XI. 203—Lancashire, XIII. 177—Russian, XIX. 519—Sweden, XX. 861—royal forests, in Northamptonshire, XVI. 297—of Vermont, XXI. 550—charter of, VI. 427; XX. 210—submarine, XV. 216; IX. 794; XVII. 641—laws, IX. 780; XX. 209—plants, V. 221.
 Forest-flies, IX. 258.
 FORESTALLING, in law, IX. 780—laws against, II. 254, 258; VII. 375.
 Forester (Mr), on the Norwegian church, XVI. 330.
 FORFAR, or Angusshire, IX. 780—agricultural statistics, XIX. 796, 797, 798—population, 799.
 — town, IX. 783.
 FORFEITURE, IX. 784; IV. 186; VIII. 777.
 FORFICULA, genus of insects, IX. 784, 155. See Earwig.
 FORGE, IX. 784; XII. 563—anchor-smith's, III. 119—anvil-smith's, 288.
 FORGERY, IX. 784; XIV. 427—on the bank of England, XV. 474.
 Forget-me-not, plant, V. 116, 124.
 FORGING, in smithery, IX. 785; XII. 558, 563—of anchors, III. 119.
 FORIS, seaport of Naples, IX. 785.
 FORISFAMILIATION, IX. 785.
 FORK, IX. 785—table-fork, ib.—trenching, II. 274.
 FORKEL (J. Nicholas), musician, IX. 785.
 FORLI, city of Italy, IX. 785—legation, XVII. 243.
 FORLORN HOPE, IX. 785.
 FORM, in physics, IX. 785—Aristotle's doctrines respecting, III. 542—faculty of, XVII. 563.
 — primitive, in crystallisation, VII. 560—secondary, 552.
 — various meanings of the word, VIII. 9.
 FORMALITIES, in law, IX. 786.
 FORMALITY, IX. 786.
 FORMAN (Andrew), archbishop, IX. 786.
 FORMARTIN, II. 32.
 Formations, in geology, XVII. 587; XXI. 834. See Epoch, Period.
 FORMEDON, in law, IX. 786.
 FORMENTERA, island, IX. 786.
 FORMIÆ, city of Latium, IX. 787.
 FORMIC acid, III. 265; VI. 510.
 FORMICA, genus of insects, IX. 787, 194. See Ant.
 FORMOSA, Chinese island, IX. 787; XIII. 218.
 — African river, IV. 653.
 FORMULA, or Formulary, IX. 787.
 FORMULARY, IX. 787.
 FORNACALIA, Roman festival, IX. 787.
 FORNAX, a constellation, IX. 787.
 FORNIX, in anatomy, IX. 787.
 FOROS, gulf of, IV. 742.
 FORRES, town in Morayshire, IX. 787—Sweno's stone near, XV. 577.

FOR—FOT

- Forest, his visit to New Guinea, in 1775, IV. 262, 263.
 FORSKAL (Peter), IX. 788.
 FORSTER (John Reinhold), naturalist, IX. 788—his works on insects, 6—on aurora australis, IV. 245—on birds of paradise, XVI. 765.
 — (Arnold), his work on insects, IX. 23.
 — (B. M.), his electric pile, XXI. 619.
 — (JOHN GEORGE ADAM), IX. 789.
 — (Mr), his rebellion, V. 454, 455.
 Forsyth (Rev. Mr), first to use detonating powder for discharging fire-arms, XI. 98.
 FORT, IX. 790. See Fortification.
 — St DAVID, town in Hindustan, IX. 792.
 — vitrified, IX. 790—of Dunagoil, VI. 26—of Dun-l-deer, II. 33—in Inverness-shire, XII. 439—Ross-shire, XIX. 427.
 FORT-AUGUSTUS, Fort-George, and Fort-William, in Inverness-shire, IX. 792; XII. 439, 440.
 Fort-William, at Calcutta, VI. 69.
 FORTALICE, IX. 792.
 FORTAVENTURA, island, IX. 792; VI. 167.
 FORTESCUE (Sir John), IX. 792.
 — family of, XI. 327, *n. l.*
 FORTH, river and firth, IX. 793; XVII. 456, 646; XIX. 791; XX. 702—Links of the, VI. 749; XX. 702—phenomenon in the tides of the firth, VI. 749—improvements in the navigation of, XVI. 75—reasons for the absence of a bar in, 81.
 — and Clyde canal, XIII. 177; XIX. 808; XVI. 55; VIII. 236.
 — in Wexford, XXI. 846, 847.
 Fortier, his entomological work, IX. 20.
 FORTIFICATION, IX. 797—value of, in war, XXI. 707.
 FORTIFIED ISLAND, IX. 837.
 Fortin's balance, IV. 384.
 FORTITUDE, IX. 837.
 Fortore, river, XX. 238.
 Fortresses, armament of, IX. 822—mode of attacking them with artillery, *ib.*; III. 691—as a means of defending England, XXI. 701—their use in war, 707.
 FORTROSE, IX. 838; XIX. 427.
 FORTUNA, goddess, IX. 838.
 — planet, IV. 91.
 FORTUNATE ISLAND, IX. 838; VI. 162.
 Fortunato Fidele, his system of legal medicine, XIV. 422—Roman, III. 471; XIX. 359, 360.
 Fortune (Mr), on the tea-plant in India, XXI. 81—on the soil of the tea-lands in China, 84—on the colouring of tea, 87.
 FORUM, IX. 838—Bacon's "idols" of the, I. 572.
 FOSCARI (Francesco), doge of Venice, IX. 838.
 FOSCOLO (Ugo), IX. 839.
 Foscolombe (Boyer de), his works on insects, IX. 22.
 Foss Dyke canal, XVI. 54.
 FOSS-WAY, Roman road, IX. 839.
 FOSSANO, city in Piedmont, IX. 839.
 FOSSARI, IX. 840.
 FOSSE, or Foss, IX. 839, 818; VI. 827.
 FOSSIL, IX. 840; XV. 128—organic remains, XVII. 637—in the Jura Mountains, XX. 887—plants, V. 232; XVII. 640—fishes, XII. 332; XVII. 115 *et seq.*, 640—serpents, 640—in Banffshire, IV. 413—shells, XV. 403. See Palæontology.
 FOSSOMBRONE, Italian town, IX. 840—silk of, XX. 278, 281; XVII. 243.
 Fossore, family of insects, IX. 194.
 Foster (Captain Henry), on the figure of the earth as determined by the pendulum, IX. 552, 573, 575—on magnetism, XIV. 15.
 — (JOHN), essayist, IX. 840—on Robert Hall as a preacher, XI. 194.
 — (Mr), on the people of Fermanagh, IX. 516; of Tipperary, XXI. 288.
 Foster-brother, V. 679.
 Fothergill's dry collodion process, in photography, XVII. 550.

FOT—FOW

- FOTHERGILL (Dr John), IX. 841.
 — (Mr), on the insensibility of insects to pain, III. 177.
 — (Richard), his rope machinery, XIX. 407.
 FOTHERINGAY CASTLE, IX. 842.
 Foucault (M.), his pendulum experiment, I. 854; XVII. 388—Hansen's theory of, I. 827, 855—on the velocity of light in different media, 910; XVI. 550.
 FOUCHÉ (Joseph), Duke of Otranto, IX. 842; X. 173 *et seq.*
 — Parisian police under, XVIII. 191.
 FOUGASSE, IX. 842.
 Fougère (M.), his edition of Pascal's *Pensées*, XVII. 328, 329—on the charge of scepticism brought against Pascal, 330.
 FOUGÈRES, in France, IX. 842.
 FOULA, or Fowla, island, IX. 843; XX. 113.
 FOULAH, IX. 843; II. 222; IX. 352; XX. 50, 51.
 FOULIS (Robert and Andrew), printers, IX. 843; X. 653; XV. 526; XVIII. 539.
 — (Sir David), V. 394.
 FOULQUES, French family, IX. 843.
 FOUMART, IX. 843; XIV. 157.
 Foundations, in building, V. 730—on land, XX. 721—in water, 722, 723.
 Founder, V. 756 acute, in horses, XXI. 561.
 FOUNDERY, or Foundry, IX. 843—of small works, *ib.*—of statues, *ib.*—of cannon, 844; VI. 177—of bells, IX. 844—at Cossipore, VII. 424—in Derbyshire, 754. See Cannon, Casting, Furnace, Gun-making, Type-founding, Iron Manufacture, &c.
 — Letter, IX. 844. See Type-founding.
 FOUNDLING HOSPITALS, IX. 844—in London, VII. 363; XIII. 673—Dublin, VIII. 224—mortality in, XIV. 444.
 Foundlings in Paris, XV. 618.
 FOUNT, or Font, of types, IX. 845; XVIII. 539, and *n.*; XXI. 402.
 FOUNTAIN, IX. 845—tree, or til-tree, *ib.*—burning fountains, X. 409—fountains in Rome, XIX. 368; Pompeii, XVIII. 286, 288.
 FOUR BOROUGH'S COURT, IX. 845.
 FOURCHAMBAULT, in France, IX. 846.
 FOURCHE (Bayon la) river, IX. 846.
 — Grande and Petite, rivers in Canada, IX. 846.
 FOURCROY (Antony Francis de), IX. 846—account of his works, 848—his work on insects, 8—on bathing, IV. 501—on voltaic electricity, XXI. 626.
 Fourdrinier's paper-making machine, XVII. 258—his paper-cutting machine, 259.
 FOURIER (Charles), sociologist, IX. 849—his system of communism, VII. 209—his cosmical views, 210.
 — (Joseph), 946—his early history, *ib.* 947—his analytic form of the problem of the conduction of heat, 947—injury done to him by the jealousy of the mathematicians of the Institute, *ib.*—his physical precision, *ib.*—his compound circuits, XXI. 651—assumptions of his analytical theory, I. 947—necessity of the law of emanation, *ib.*—his definition of conducting power, 948, and of "entire conductivity," *ib.*—his *Théorie Analytique*, *ib.*—instances of problems solved by him, *ib.*—application of his principles to the thermal condition of the earth, 949—on the proper heat of the globe, *ib.*—on the temperature of space, 950, 951—his writings on pure mathematics, 951—his experiments and style, *ib.*—death, *ib.*
 FOURMONT (Etienne), IX. 849.
 Fournel (M.), his work on magnetic somnambulism, XX. 424.
 FOURNESS, or Furness, in Lancashire, IX. 849; XIII. 177.
 Fourneyron's water-wheel, XII. 75, 169; I. 889.
 FOU-TCHOW-FOU, IX. 849.
 FOWEY, in Cornwall, IX. 849.
 — Consul's pumping engines, XX. 612.

FOW—FRA

- Fowl, domestic, as food, IX. 762—Egyptian mode of hatching, XVIII. 815.
 Fowler's steam draining apparatus, VIII. 131.*
 — (Mr), on heating hot-houses, XI. 723.
 — (William), VIII. 190, *n. l.*
 Fowlerite, mineral, XV. 82.
 Fowling-piece, XX. 213—charging the, 214.
 Fox, IX. 849; XII. 43; XIV. 164; XXI. 548—varieties of, and value of their skins, X. 349—fox-hunting, XII. 35 *et seq.*
 — (CHARLES JAMES), IX. 849—on the balance of power, IV. 392; V. 526—the coalition joined by, 506—on the establishment of the Prince of Wales, 507—his India bills, 508, 528; XI. 496—parliamentary conduct, V. 509 *et seq.*—ruin of his political fortunes, 513—elected member for Westminster, 514—on the Germanic league, 517—on the sinking fund, 518—on the commercial treaty with France, 521, 522—his denial of the Prince of Wales' connection with Mrs Fitzherbert, 523—on the right of the Prince of Wales to assume the regency, 531—on the slave-trade, 533, 540—on increasing the army, 535—on the Corporation and Test Acts, 536, 534—his quarrel with Burke, 537—on the relief of the Catholics, 538—on parliamentary reform, 543, 549—on the king's speech, in 1792, 545—on treating with the French Republic, 546—on the French war, 548, 552, 556, 578—on the expediency of peace with France, in 1800, 570—on the conduct of the war, &c., 578—on the piece of Amiens, 587—part taken by, in the trial of Warren Hastings, 520, 523, 534—Canning's attack on, VI. 173—on the conduct of Prussia in annexing Hanover to her territory, X. 141—his speeches, XVII. 736—George III.'s refusal to admit him into the ministry, 742. See Pitt.
 — (GEORGE), IX. 858; XV. 758; XVIII. 714 *et seq.*
 — (JOHN), martyrologist, IX. 859.
 — (Were), on electrical currents, XV. 193.
 Fox's dipping-needle deflector, XIV. 87.
 FOX-GLOVE, plant, IX. 859. V. 202. See Digitalis.
 FOX-HOUND, IX. 859; XI. 764.
 Fox-islands, II. 465.
 Fox-tail grass, V. 215.
 — wedging, VI. 263.
 Foxdale, mines of, XIV. 244.
 FOXE (Captain Luke), his voyages, XVIII. 169.
 Foy (General), X. 191, 192—on the military character of the French and British, III. 642, 667—on the British mode of attacking fortresses in Spain, IX. 825.
 FOYERS, fall of, IX. 859; XII. 438.
 FOYLE, in Ireland, IX. 859; XII. 505; VIII. 104; XXI. 407, 408—its salmon-fisheries, IX. 623, 625.
 — loch, XIII. 680, 681; VIII. 104—a base in the trigonometrical survey, XXI. 332, 334.
 FRACASTORIO (Hieronymus), IX. 859—his poem "De Morbo Gallico," XX. 817, *n. 3.*
 FRACTION, IX. 860—algebraic, II. 492—continued, 537—vulgar fractions, III. 597—decimal, 599, 602; VII. 691; I. 551—vanishing, IX. 696.
 FRACTURE, IX. 860—in minerals, XV. 55—surgical treatment of fractures, XX. 826—in veterinary science, XXI. 557.
 FRAISE, in fortification, IX. 860, 799.
 FRAME, IX. 860—roving-fly-tube—spinning, VII. 444.
 Frame-breaking, acts against, V. 612.
 Framing, in joinery, V. 751; XII. 810.
 FRAMLINGHAM, town in Suffolk, IX. 860; XX. 791.
 FRANC, French coin, IX. 860; X. 284; XV. 441, 443.
 FRANCAVILLA, town of Naples, IX. 860.

FRA—FRA

- FRANCE, X. 1; IX. 399; VI. 681 *et seq.*—statistics in 1855, X. 240—its progress in philosophy during the seventeenth century, I. 49—Addison's censure of the French writers of his day, 55—sterility of invention in French metaphysicians between Descartes and Condillac, 172, *n. 3*—disposition of the philosophers of the eighteenth century to push their theories to extremes, 180—prevalence of Atheism in Paris, 181—literature of the eighteenth century divided into two epochs, 277—writers on mental philosophy, 184—French and German schools of philosophy contrasted, 186, 187—unrivalled skill of the French in experimental physics, 957—achromatic telescopes, II. 94—law of bankruptcy, IV. 418—academies, II. 64, 67, 69, 71—agriculture, 253; IV. 313; VII. 432, 433—wars with the Algerines, II. 569 *et seq.*—Algiers taken, 573—manufacture of alum in, 641—West Indian colonies, 708—manufacture of sal-ammoniac in, 721, 722—collections of bon-mots or ana, 738—cultivation of anatomy, 757, 763—aqueducts, III. 336—pointed architecture, 448—influence of the Italian school upon architecture, 453—army, 638—artillery, 686, 687—painters, 712—voyages of discovery to Australasia, IV. 253—war with Austria, 304—comparative culture of Britain, Austria, and, 313—policy of Austria towards, 320—baking of bread, 380—beards and whiskers, 528, 529—management of bees, 587—Belgium under the rule of, 598—bibles, 701—mode of teaching the blind, 776—bleaching, 759—wars with Britain, V. 445, 447, 451, 459, 462, 483—conquest of Minorca, 463; and of Hanover, 464—league with America against Britain in 1778, 483—commercial treaty with Britain in 1786, 521; VII. 190, 195, 455—Revolution, V. 535, 539, 463; VII. 649—revolutionary war with Britain, V. 546 *et seq.*—peace of Amiens, 585–87—expedition to St Domingo in 1801, 591; XI. 256—war with Britain renewed in 1802, V. 594—Peninsular war, 603 *et seq.*—peace of 1814, 614—Napoleon's return from Elba, 618—battle of Waterloo, 619 (see Waterloo)—policy of British participation in the revolutionary war considered, 620—revolution of 1830, 658—trade with Chile, VI. 551—influence of the French civil wars on chivalry, 624—morality of the court in the sixteenth century, 625—church of, 713—colonies, VII. 149; II. 708—coal in, VII. 126–27; XXI. 60—mercantile policy, VII. 193, 195—iron manufactures, 195—short credits, 198, 199—influence of socialist opinions in, 214—construction of floors, 331—law of copyright in, 359—corn trade, 403—condition of the agriculturists, 432—effects of the minute division of land, *ib.*—cotton-manufacture, 459—condition at the period of the Crusades, 528—persecution of the Protestants, VIII. 125—the drama, 143, 144, 146, 149, 167—duelling, 230—title of Duke, 234—dyeing, 274—the Economists, 374—invasion of Egypt, 488; V. 564; XV. 791—invasion by Edward III., VIII. 683; and by Henry V. 688—trade with England, 733—restrictions on British trade with, IX. 436—fairs in, 468—mountains, 383—fan-making, 481—feudal law, 524—siege of Antwerp in 1832, 826—glass-making, X. 659—tables of ranges for cannon, XI. 149—hats, 242—contests with the English in Hindustan, 482, 483—historical writers, 548—invasions of Holland, 577, 579, 580—Holland incorporated with, 579—interest of money, XII. 429, 431—insurance offices in, 413—invasions of Ireland, 494, 498, 499—Jews in, 779, 782, 783—iron ores of, 541—iron bridges in, 581 *et seq.*—Jesuitism, 755—joinery, 805—expedition to Italy in 1849, 659—Italy under,

FRA—FRA

653—orders of knighthood, XIII. 120—
manufacture of lace, 142—language,
213—Code Napoleon, 272; XV. 793—
law of libel, XIII. 356—libraries, 406—
lighthouses, 464, 476—medical juris-
prudence, XIV. 423, 424—lead mines of,
XV. 242—value of the produce of its
mines, 248—eocene rocks, 213—miocene,
214—monarchy, 413—seignorage on
coined money, 425—money, 434, 436;
XVI. 387—silver as a standard, XV.
429—Bank of, 489, 490—education in,
818—law regulating education, 819—
first use of gas-lights in, X. 410—crown
of, XI. 335—newspapers of, XVI. 195;
published during the revolution, 198—
press law of 1852, 200—expedition to
Rome in 1849, XII. 659—leprosy in,
XIII. 340, 341—lotteries, 697—propor-
tion of insane in, XIV. 536—school of
painting, XVII. 75—paper-making, 261
—progress of philology in, 523—heights
of the principal mountains in, 642, 643
—limited liability in, 318—poetry,
XVIII. 115—police of, 184—political
economists, 220, 231—invasion of Por-
tugal, 387—post-office, 420, 424—ocean
mails, 427—pottery and porcelain fac-
tories, 432, 433, 437, 438—precious metals
employed in currency, 465—currency
chiefly in gold, 473—Presbyterianism
in, 487—registration in, 841—railway
statistics, 787—the Reformation, 827—
roads, XIX. 229—romance, 266, 286—
wars with Russia, 492 *et seq.*—school of
sculpture in, 865—attention to sanitary
measures in, 603—war with Austria in
1859, 643—savings-banks, 672—navy,
XX. 131, 136, 138—dominion in Naples,
261, 264—production and manufacture
of silk in, 278—mesmerism and som-
nambulism in, 418, 422—war with Swe-
den, 859—invasion of Switzerland, 886
—surgery in, 816 *et seq.*—masonry, 711
—beet-root sugar, 798—suicides in, 800
—co-operation with Britain in abolish-
ing slavery, 323—war with Spain in
1823, 476—effects of the reduction of
the duties on fish, sugar, and salt, XXI.
72—old system of taxation in, 41—con-
sumption of tea in, 91—wars with United
States, 434, 438—colonies in United
States, 432—universities, 444, 491—
weights and measures, 805, 810—wines
and wine-making, 882, 890, 891—woollen
and worsted manufactures of, 920—
textile industry in, 780, 793—factory
legislation of, 791—maps of, X. Plates.
See French.

FRANCE, Isle of, X. 285; XIV. 362.
FRANCE Comté, X. 285, 277.
FRANCHISE, X. 285, 738—in England,
XVII. 293—Scotland, 294—Ireland, *ib.*
Roman, XIX. 307.
FRANCIA (Dr), dictator of Paraguay, XVII.
269.
FRANCILLON (John), his work on insects,
IX. 8.
FRANCIS I., king of France, VI. 615—reign
of, X. 30—duelling encouraged by,
VIII. 230—his wars in Italy, XII. 652—
Paris improved by, XVII. 278—police
measures of, XVIII. 184.
—II., king of France, X. 32.
—II., king of the Two Sicilies, XX.
263, 264.
—II., emperor of Austria, IV. 304.
—Joseph, emperor of Austria, IV.
308; XIX. 644.
—(PHILIP), poet, X. 285.
—(Sir PHILIP), X. 285; V. 513, 520.
—(St), XV. 408; X. 286.
Franciscan library at Rome, XIII. 412.
FRANCISCANS, X. 286, 299; XIV. 497—in
Jerusalem, XII. 747.
Francisco (San), VI. 96—county of, 100—
river, XVII. 603, 646.
Francis, his work on insects, IX. 17.
Franco (Matteo), VIII. 250.
Francolins, birds, XVI. 791.
FRANCONIA, X. 286; IV. 516, 517—chief
towns in, 518—invasion by Gustavus
Adolphus, XX. 850.

FRA—FRA

FRANKER, town in Holland, X. 286.
FRANK, X. 287—laws of the Franks, VI.
220—wars of the Romans with, VII. 306
—Dubos on their entry into Gaul, VIII.
227—language X. 287—their con-
quest of Gaul, 2; of Helvetia, XX. 883.
—(Dr James), on the plague, XVII.
750.
—(Dr Lewis), on the plague, XVII.
748 *et seq.*
FRANK-ALMOIGNE, X. 287—pledge, *ib.*
FRANKENBERG, town in Saxony, X. 287.
FRANKENHAUSEN, town in Germany, X.
287.
Frankenheim (Dr), on capillary attraction,
XII. 102.
Frankeniaceæ, nat. order of plants, V. 183.
FRANKENSTEIN, in Silesia, X. 287.
FRANKENTHAL, in Bavaria, X. 287.
FRANKFORT-ON-THE-MAINE, X. 287, 694—
fairs, IX. 468—coins, XV. 441—meet-
ing of the vor-parliament at, X. 581—
Jews in, XII. 783—weights and mea-
sures, XXI. 811.
—ON-THE-ODER, X. 288—fall of rain
at, XVIII. 662.
—in Kentucky, X. 289; XIII. 70.
FRANKINCENSE, X. 289; XII. 366.
Franking of letters, act for regulating, V.
468; XVIII. 405—abolished, 411; XXI.
69—in France, XVIII. 423.
Frankish dialects, X. 587.
FRANKLAND'S ISLANDS, X. 289.
FRANKLIN (Benjamin), X. 289—his theory
of electrical phenomena, I. 734—his
talents and acquirements, *ib.*—his float-
ing anchor, III. 118—his controversy
with Nollet, V. 368—his friendship with
J. Canton, VI. 201—his British ances-
tors, XVI. 298—his discoveries in elec-
tricity, I. 734; VIII. 527—proved the
electrical character of lightning, I. 735;
VIII. 582—on the magnetic effects of
electricity, 600—his electrical kite, 608;
XIV. 660—his theory of the Leyden
jar, VIII. 612—on musical glasses, XI.
230—his magic square and circle, XIII.
811—on population, XV. 601—ambas-
sador to France, X. 38—his epigram on
himself, IX. 283—appointed postmaster-
general, XVIII. 408—on the art of
swimming, XX. 879—anecdote of White-
field and, XXI. 855—English ancestors
of, 740.
—Fort, temperature at, VI. 770.
—Institute, their experiments on the
elastic force of steam, XX. 558—formu-
la representing the relation of the
pressure and temperature of steam,
565.
—(James), newspaper published by,
XVI. 193; X. 289, and *n.* 3.
—(Sir JOHN), X. 294—on aurora bore-
alis, IV. 247, 249—on the temperature
of the arctic regions, VI. 770—his arctic
expeditions, X. 473, 474; XVIII. 171,
172—expeditions sent in search of, 172
et seq.—discovery of the fate of, X. 298;
XVIII. 175—last despatch received from,
XIV. 490—governor of Tasmania, XXI.
32.
—(Lady), searching expeditions pro-
moted by, XVIII. 173, 175.
—(THOMAS), X. 299.
Franklinite, mineral, XV. 108.
FRANCINI (M.), on the statistics of Swit-
zerland, XX. 888.
FRANZÉN (F. Michael), Swedish poet, XIX.
699.
FRASCATI, Italian town, X. 299.
Fraser, on Arabia, III. 342, *n.*—on Persia,
XVII. 419 *et seq.*—on the Himalayas,
XI. 447, 448, 452.
FRASERBURGH, X. 299; II. 34.
Fratricula, genus of birds, XVI. 810.
Fraternal duty, XV. 569.
FRATRICELLI, X. 299.
FRAUNBURG, in Prussia, X. 300.
FRAUNHOFER (Joseph von), X. 300; I.
915—his discovery of the lines of the
spectrum, 916, 751; XVI. 558—achro-
matic glasses improved by, I. 751, 915—
superiority of the flint-glass produced

FRA—FRE

under his inspection, 752 and *n.*—on
electrical light, VIII. 546—Dorpat tele-
scope made by, IV. 150—on the spec-
trum, XIII. 452—his micrometers, XIV.
758, 789—his microscopes, 777—his op-
tical discoveries, I. 752; XVI. 544, 580,
609, 610 *et seq.*—on the illuminating
power of the spectrum, XVI. 590.
Fraunhofer and Utzschneider (Messrs),
their manufacture of telescopes, XXI.
121.
FRAUSTADT, town in Posen, X. 300.
FREA, or Frigga, wife of Odin, X. 300, 312.
—Friday named from, 309.
Fredegonde, X. 4.
Frederic, elector-palatine, V. 386.
FREDERICIA, town in Denmark, X. 300.
FREDERICK, X. 300.
—Barbarossa, XVII. 197—his opera-
tions in Italy, XII. 646—engaged in the
Crusades, VII. 525.
—I., king of Prussia, XVIII. 650.
—II., the Great, X. 300—reign of,
XVIII. 651—his army, III. 637—his im-
provements in artillery, 684—his con-
tempt for the doctrines of the gospel,
XII. 762 and *n.* 3—his monument at
Berlin, IV. 679—his opposition to the
plan of Joseph II. for the acquisition of
Bavaria, V. 516—Rauch's monument to,
XVIII. 811—Voltaire's intercourse with,
XXI. 658, 659—his military tactics, XX.
705, 707, 711 *et seq.*
—II., emperor of Germany, XX. 257,
263—sciences encouraged by, III. 796—
his invasion of Palestine, XVII. 197—
his patronage of the university of Bol-
ogna, XXI. 449.
—IV., of Denmark, VII. 741.
—V., of Denmark, VII. 742.
—VII., of Denmark, VII. 743, 744.
—Prince of Wales, his death in the
year 1751, V. 462.
—Prince of Almatara, XX. 263.
—I., elector of Brandenburg, XVIII.
647.
—II., elector of Brandenburg, XVIII.
647.
Frederick-William, the Great Elector,
XVIII. 649—army improved by, III.
637.
—I., II., III., IV., kings of Prussia,
XVIII. 650, 655, 658.
—town in Maryland, X. 302.
FREDERICKSBURG, in Zealand, X. 302.
FREDERICKSBURG, X. 303.
FREDERICKSHALD, or Frederickshall, X. 303
—siege of, XX. 856—assistance given by
Swedenborg at, 867.
Fredericksvoern, in Norway, XIII. 250.
FREDERICKTON, X. 303; XVI. 163, 164.
FREDRO (Maximilian), X. 303.
FREE BENCH, X. 303.
—CHURCH, X. 303; V. 669; XVIII.
494—in Edinburgh, VIII. 398—college,
400—schools, XV. 825; XIX. 802—sum
expended on missions, XV. 272—settle-
ment at Otago, XVI. 235—union of the
Associate Union of Original Seceders
with, XVIII. 502—proportion of adhe-
rents to, XIX. 801—in Sutherland, XX.
843. See Disruption of the Established
Church.
—IMPERIAL CITIES, X. 303.
—Town, Sierra-Leone, XX. 271.
—trade, VIII. 374—advantages of, VII.
195, 455; XVIII. 230—its effect on our
diplomacy, VIII. 40—customs-duties not
inconsistent with, XXI. 62—duties on
tea under, 90.
—will, XVII. 369—Erasmus on, XIII.
734. See Liberty, Necessity.
FREEBOOTERS, X. 303; V. 707.
FREEDMAN, X. 303.
FREEHOLD, X. 303—effects of dividing land
into small freeholds, VII. 432.
FREEMASONRY, X. 303; XIV. 336—Diony-
sians of Ionia, III. 401.
Freemen, mode of making, at Alnwick, II.
603.
FREESTONE, X. 303—strength of, XX. 758,
759. See Sandstone.
Free-thinkers, VII. 701.

FRE—FRE

FREEWILL ISLANDS, X. 303.
FREEZING, X. 303; VII. 101, 103, 106—
Leslie's experiments on, I. 945—effect
of, on building stone, XX. 712—freezing
point, XXI. 222.
Frégier (M.), his work on the police of
Paris, XVIII. 185, *n.* 9.
Fregilus, genus of birds, XVI. 754, 771.
FREIBERG, in Saxony, X. 303—silver mines
of, XV. 235—Wernerian School at, XXI.
834.
FREIBURG, in Baden, X. 304.
—or Freyburg, or Friburg, in Switzer-
land, X. 304; XX. 882—university of,
XXI. 492.
Freieslebenite, mineral, XV. 120.
FREIGHT, X. 305; VI. 428.
FREIND (John), X. 305; XIV. 462.
FREINSHEIM (Johann), X. 305.
Freire (General), VI. 553.
FREISING, in Bavaria, X. 305.
FREJUS, French town, X. 305.
French, their skulls, III. 29—their military
character, 642—intellectual character,
IV. 211, 212—contrasted with the Ger-
mans, VIII. 167—historical writers, XI.
548—fur settlements, X. 346—their
gallantry, XX. 79, *n.*—rise of their
naval power, 131—their ships, *ib.*; 133
—cultivation of seamanship, 2—their
improvements in sugar-making, 793
—French Canadians, VI. 144. See
France.
—Academies, provincial academies, II.
64—Academy of Painting and Sculpture,
67—Royal Academy of Music, 68—aca-
demies of architecture, medals, and
inscriptions, 69—French Academy, 71.
—Academy of Sciences, II. 63—ex-
pedition sent by, to determine the figure
of the earth, IX. 548, 549; I. 772, 773;
V. 243; VII. 229—experiments on the
force of steam, XX. 558—formula re-
presenting the result of these experi-
ments, 565.
—beans, IV. 526; IX. 760; XI. 738.
—berries, dyestuff, VIII. 294.
—colonies of the United States, XXI.
432—wars in, 434.
—Institute, XII. 392. See Institute
of France.
—language, XIII. 213—used in diplo-
macy, VIII. 41—Norman, 793—Bibles,
IV. 701.
Frenicle on magic squares, XIII. 810.
FREERE (John Hookham), X. 306.
Frere's system for the blind, IV. 782;
XVIII. 554.
FRESCOBALDI (Girolamo), X. 306.
FRESCO-PAINTING, X. 306; XVII. 52, 60.
FRESHES, X. 306—effects of, XIX. 206,
220.
Fresh-water serpents, XIX. 58.
Freshwater, Isle of Wight, XXI. 862.
FRESNEL (Augustin-Jean), X. 306; I. 903
—his explanation of the exterior fringes
of shadows, 899; VI. 651—on the dif-
fraction of light, I. 903; improves on
Young's theory, *ib.*—on transverse vibra-
tions, 904; applied to the theory of
light, *ib.*—on the laws of reflection and
refraction, *ib.*—his Rhomb, 905—his ex-
planation of the theory of double refraction,
ib.—on the theory of crystals with
two axes, *ib.*—reception given to his
theory of double refraction, 906—on
chromatics, VI. 643 *et seq.*—his system
of lighthouse illumination, I. 906; XIII.
471—on lenses, 472—his mechanical
lamp, 473—on magnetism, XIV. 42—
his optical discoveries, XVI. 543, 544,
545, 598, 607, 631 *et seq.*; I. 908, 909—
death and character, 907.
—(Leonore), I. 907; XIII. 471, 479;
X. 308.
FRESNOY (Charles Alphonse du), X. 308.
FRET, or Fretle, architectural ornament,
X. 308.
—and Fretty, in heraldry, XI. 330.
Fréteau (M.), X. 43.
FREUDENSTADT, X. 308.
FREUDENTHAL, X. 308.
FREY (Joachim), X. 308; VIII. 807, 808

FRE—FRO

Freyberg. See Freiberg.
 Freycinet (M.), on the variation of the needle, XIV. 54—his pendulum observations, IX. 573, 574.
 Freyer (C. F.), his works on insects, IX. 21, 24.
 Freytag, his novels, XIX. 293.
 FRIAR, X. 308—observant, *ib.*—preaching, VIII. 99.
 Fricento, town of Naples, X. 312.
 FRICTION, X. 309; XIV. 405—Coulomb on, VII. 462, 464; I. 873—of fluids, 886—index of, 887—heat from, XI. 275; XIV. 408—combustion from, 427—effect of, in substances employed in architecture, V. 354—electricity produced by, VIII. 535—effects in diminishing the velocity of water, XII. 71—stability of friction, XIV. 381, 382—work of, 405—moment of, 406—of pivots and collars, *ib.*—of teeth, 407—of cords and belts, *ib.*—friction-couplings, 408—unguents to counteract, 405, 408—of railway trains, I. 884, 885—friction-brakes, XX. 601.
 Friction-match, XIV. 352.
 FRIDAY, X. 309—origin of the name, 300; I. 458, *n.*; VI. 75.
 Fridericia, town in Jutland, X. 300.
 FRIEDLAND, X. 309—battle of, 146; XIX. 493.
 FRIDSTOL, X. 309.
 FRIENDLY ISLANDS, X. 309; XVIII. 276.
 — SOCIETIES, X. 309.
 FRIENDS, Society of, X. 311. See Quakers.
 — of the People, societies of, in 1792, V. 542, 545; VIII. 393.
 Friendship, Aristotle on, III. 563—among the Cretans, VII. 495.
 Frienshemius's account of the serpent that attacked Regulus, XIX. 63.
 Fries (B. F.), his work on insects, IX. 15.
 FRIESLAND, X. 311—east, 312; IV. 242—language, XIII. 211.
 FRIEZE, in architecture, X. 312; III. 509—Doric, 464, 476—Ionic, 465, 475—Corinthian, 467, 474—enrichments of Roman, 477.
 — coarse woollen cloth, X. 312.
 FRIGA, wife of Odin, X. 312, 300.
 FRIGATE, X. 312; XVI. 96; XX. 135—the first built, 128—steam-frigates, 138, 640.
 Frigate-bird, XVI. 814.
 FRIGATOON, X. 312.
 FRIGENTO, town of Naples, X. 312; II. 732.
 Frigid zones, X. 483.
 Frigorific saline powders, VII. 102, 104. See Congelation.
 FRILAZIN, X. 312.
 Fringe-myrtle, order of plants, V. 192.
 Fringes, in optics, XVI. 605, 621; XIV. 679; I. 899.
 Fringilla, genus of birds, XVI. 760.
 Frisch (J. Leonard), his work on insects, IX. 4—on birds, XVI. 726.
 FRISCHE-HAFF, X. 312; XVIII. 662.
 FRISI (Paul), X. 312.
 Frisian language, X. 588.
 FRISII, X. 314, 312, 572.
 Frisius (Gemma), XVI. 3; XIII. 686.
 FRIT, or FRITT, X. 314.
 Frith (John), VII. 482.
 Fritillary, V. 212.
 Fritzsche on the opening and closing of flowers, V. 150, 151.
 FROBENIUS (Joannes), X. 314.
 FROBISHER (Sir Martin), navigator, X. 314—his north-west voyages of discovery, 473, 624; XVIII. 166.
 — STRAIT, X. 315; XI. 29; XVIII. 166 and *n.* 2.
 FRODSHAM, town in Cheshire, X. 315.
 Frog-bit order of plants, V. 210.
 Frogs, XIX. 75—fossil, XVII. 153—capillaries in the foot of, II. 797; XVII. 692—bones of, III. 86 *et seq.*—proper electricity of, I. 960—effect of light on the spawn of, XIII. 460—matlametlo frog, XVII. 634—as food, XIX. 76.
 — in Farriery, X. 317.
 Frog-spittle, IX. 170. See Froth-spit.

FRO—FUE

FROISSART (Jean), X. 315—his "Chronicles," VI. 615 *et seq.*—his account of Gaston, earl of Foix, 613—an enthusiastic describer of the combats of knights, 617—instances of chivalry quoted from, 618, 619, 621—on hats, XI. 240.
 Frolich (F.), his work on insects, IX. 16.
 FROME, river and town, X. 315; VIII. 111.
 Froment (M.), his microscopic writing, XIV. 802.
 Froment's electro-sorting machine, XXI. 644.
 FROMISTA, Spanish town, X. 315.
 Frond, V. 76—of ferns, 143.
 FRONTAL, X. 316.
 — bone, in man, III. 15—suture of the, 27—in the mammalia, 77—in birds, 85.
 — sinus, III. 30—varying size of, XVII. 567 and *n.*
 FRONTINUS (Sextus Julius), X. 316—on the Roman aqueducts, III. 333—on hydraulics, XII. 69.
 FRONTISPIECE, in architecture, X. 316; III. 510.
 FRONTO (Marcus Cornelius), X. 316—discovery of his works by Mai, XVII. 212.
 FROSINONE, Italian town, X. 316—delegation of, XVII. 243.
 Frost, X. 316—depth to which it penetrates into the earth, VI. 768; in the polar regions, XVIII. 178—why a scarcity of water from springs is occasioned by, 72. See Congelation, Freezing.
 — HOAR, X. 316; VII. 765, 769; XIV. 653.
 — (John), V. 667; XVI. 178.
 — (Mr), his endeavours to make artificial cement, XX. 714.
 FROTH-SPIT, or cuckoo spit, X. 316; IX. 167.
 Froude (Mr), on English history, XI. 539.
 FROWDE (Philip), poet, X. 316.
 FROZEN OCEAN, X. 316. See Polar Sea.
 Fructiferi, academy of, II. 70.
 Frugardite, mineral, XV. 85.
 Fruit, in botany, V. 134, 191—physiology of, 160—transformations in, 139—fruits as articles of food, IX. 759—preservation of, 767—culture of hardy fruits, XI. 707; of small fruits, 717. See the different countries, under vegetable productions
 — garden, XI. 702—calendar, 758 *et seq.*
 FRUIT-TREES, X. 316—their propagation by seeds, XI. 702; by cuttings, 703; layers, *ib.*; grafting, *ib.*, 704; budding, *ib.*—planting of, *ib.*—training of, 705, 706—protection of the blossom, 707.
 Fruiting-house, for pine-apples, XI. 733.
 FRUMENTACEOUS, X. 316.
 FRUMENTARI, Roman soldiers, X. 316.
 FRUMENTATIO, X. 317.
 Frumentius, Christianity introduced into Abyssinia by, II. 57.
 FRUSH, or Frog, in farriery, X. 317.
 FRUSTUM, in geometry, X. 317.
 FRUTEX, a shrub, X. 317.
 Fry (Dr), his alphabet for the blind, XVIII. 554.
 — (Mrs). See Gurney, Elizabeth.
 Frying, IX. 766.
 Fryxell (Anders), XIX. 700.
 FUCA (Juan de), strait, X. 317.
 Fucaceæ, sub-order of algæ, V. 217, 148.
 FUCHIA, flowering shrub, X. 317; V. 192; XI. 748—in Terra del Fuego, XVII. 629.
 FUCH, sea-weeds or algæ, X. 317; V. 217, 229; XVII. 629.
 FUCINUS LACUS, X. 317; XII. 638; XX. 238.
 Fucola, genus of mollusks, XV. 369.
 FUCUS, ancient dye, X. 317.
 Fuegians, II. 677.
 FUEL, X. 317; XIV. 444—for furnaces, X. 360—composition of, XX. 352—dung of cattle used for, in Egypt, II. 721—for fusing iron-ores, XII. 542—of light-houses, XIII. 480—economy of, in

FUE—FUN

steam-vessels, XX. 647, 648—patent for steam-boilers, 653. See Coal, Coke, &c.
 FUENCALIENTE, Spanish town, X. 322.
 FUENCARRAL, Spanish town, X. 322.
 FUENLABRADA, in Spain, X. 322.
 FUENMAYOR, Spanish city, X. 322.
 FUENSALIDA, Spanish town, X. 322.
 FUENSANTA, Spanish town, X. 322.
 FUENTE-ALAMO, Spanish town, X. 322.
 FUENTE-CANTOS, Spanish city, X. 322.
 FUENTE-DE-LEON, Spanish town, X. 322.
 FUENTE-DEL-MAESTRE, Spanish town, X. 322.
 FUENTE-DEL-SAUICO, Spanish town, X. 322.
 FUENTE-EL-FRESNO, Spanish town, X. 322.
 FUENTE-LA-HIGUERA, Spanish city, X. 322.
 FUENTE-OBEJUNA, Spanish town, X. 323.
 FUENTEPELAYO, Spanish town, X. 323.
 FUENTERABIA, Spanish city, X. 323.
 FUENTES-DE-DON-BERMUDO, Spanish town, X. 323.
 FUENTES-DE-EBRO, Spanish town, X. 323.
 FUENTES-DE-LA-CAMPANA, Spanish town, X. 323.
 FUENTES-DE-LEON, Spanish town, X. 323.
 FUENTES-DE-ONORA, Spanish town, X. 323—battles of, V. 608; XXI. 824.
 FUEROS, X. 323.
 Fuerteventura, island, VI. 167.
 Fuessli (J. C.), his works on insects, IX. 10.
 FUGALIA, X. 324; XVIII. 831.
 FUGLEMAN, X. 324.
 FUGUE, in music, X. 324; XV. 735.
 Fuhchau, Chinese town, opened to British commerce in 1842, VI. 597—exports and imports, 591.
 Fulahs, IX. 352. See Foulahs.
 FULCRUM, in mechanics, X. 324; XX. 541.
 FULDA, X. 324; XI. 362.
 Fulgora, genus of insects, IX. 168; XIII. 458.
 FULHAM, in Middlesex, X. 324—Fulham ware, XVIII. 433—the Refuge, female prison at, 585.
 Fulhame (Mrs), her method of ornamenting stuffs with gold figures, XIII. 459.
 Fulica, genus of birds, XVI. 807.
 Fuligula, genus of birds, XVI. 812.
 Fulke of Anjou, XIII. 113.
 FULLER (Rev. Andrew), X. 324—on the Antinomian doctrine regarding moral distinctions, XV. 543, *n.* 4.
 — (THOMAS), English divine, X. 325—on the Church of England and Puritanism, XVIII. 488—his notice of the ship Sovereign, XX. 128—on the qualities of the ships of different nations, 129—of his description of Surrey, 836.
 FULLER'S EARTH, X. 327; XV. 83.
 — teazel, V. 196; XXI. 922.
 FULFING, X. 327—of wool, VIII. 275—of cloth, XXI. 921.
 Fulmar, bird, XVI. 812.
 Fulminary tubes, or Fulgurites, VIII. 585; XIV. 662.
 FULMINATING compounds, or fulminates, X. 327; VI. 474—chloruret of azote, I. 952.
 FULMINATION, X. 327.
 Fulminic acid, VI. 474.
 FULNEK, X. 328.
 FULTA, in Hindustan, X. 327.
 FULTON (Robert), X. 327—his steamboats, I. 869; XX. 638.
 Fulvius, siege of Ambracia by, II. 661.
 Fumaria officinalis, plant, V. 114.
 Fumariaceæ, nat. order of plants, V. 182.
 FUMIGATION, X. 328.
 Fumitory order of plants, V. 182.
 FUNAMBULUS, X. 328.
 FUNCHAL, X. 328; XIII. 796, 798—dew point at, IV. 184.
 FUNCTION, X. 328—animal functions, II. 774—discontinuous functions, in analysis, I. 807—Fourier on, 951—in fluxions, IX. 679; values of, 697.
 FUND, X. 328—sinking-fund, VIII. 752. See that article.
 FUNDAMENTAL BASS, X. 328. See Music.
 FUNDI, town in Latium, X. 328; IX. 751.
 FUNDING SYSTEM, X. 328—difficulties in 1799, V. 559, 562—national debt of the

FUN—FUS

United Kingdom, VIII. 752—article on, in this work, by Ricardo, XIX. 155. See Debt, National.
 Fundulus, genus of fishes, XII. 252.
 FUNDY, Bay of, X. 343; XVI. 343—tide in, XVII. 581.
 FUNEN, island, X. 343; VII. 746.
 FUNERAL RITES, X. 343—of the North American Indians, II. 681—of the ancients, V. 774, 795—coronach, VII. 412—funeral games, X. 344—oration, 345—in Egypt, VIII. 443, 449—escutcheons, XI. 340. See Burial, Tomb.
 — ritual, or Egyptian book of the dead, VIII. 441; XVII. 263.
 FUNERKIRCHEN, Hungarian city, X. 345.
 FUNGI, nat. order of plants, X. 345; V. 217—reproductive organs of, 146—spawn of, 85—a frequent cause of disease in plants, 171, 172—poisonous species, XIV. 439; XVIII. 131—their connection with dry rot, VIII. 208.
 FUNGIBLES, in Scots Law, X. 345.
 Fungicolæ, family of insects, IX. 151.
 Fungidæ, polypes, XXI. 1005.
 Fungus. See Fungi.
 FUNICULAR, or rope machine, X. 345.
 Funiculi, in botany, V. 130, 137.
 Funnels, filtering, IX. 582.
 Funza, river, IV. 808.
 FUR-TRADE, X. 345—Russian, II. 465; XIX. 551—Canadian, VI. 142—Hudson's Bay Company, XI. 791—imports of furs into the United Kingdom, VIII. 735; X. 347.
 FURCA, in antiquity, X. 352.
 FURCHÉ, in heraldry, X. 352.
 Furcocerca, genus of animalcules, III. 204.
 Furcula, a bone in birds, III. 86.
 FUREDPORE, town of Hindustan, X. 352.
 FURETIÈRE (Antoine) X. 352—his table-talk, II. 738.
 FURIA infernalis, XVI. 324.
 FURIES, X. 352; IX. 374.
 FURLONG, X. 353.
 FURLOUGH, X. 353.
 FURNACE, X. 353—for assaying, III. 768, 769—for brass-making, V. 277—air-furnace for casting cannon, VI. 182—reverberatory furnace, 178—number of, in Great Britain, VIII. 726—for smelting lead, XIII. 298, 299—blast furnace, XII. 545, 546—cupola furnace, 545; hot-blast furnace, 547, 548, 549, 550—coining, VII. 87—glass-making, X. 661, 672, 674—plans for the prevention of smoke in, XX. 354—hot-house, XI. 720—smoke-consuming, 720—current of air in, XVIII. 80.
 FURNEAUX ISLANDS, X. 360.
 — (Tobias), his voyage of discovery, IV. 253.
 FURNES, town of Belgium, X. 360.
 Furniture, works on, XII. 806.
 — of guns, XI. 100.
 Furnival (Lord), in Ireland, XII. 472.
 Furnival's Inn, XII. 385.
 FURRUCKABAD, town in Hindustan, X. 361.
 Furs, animals producing, X. 347—preservation of, 349—manufacturing of, 350—carroting fur, 351—used in hat-making, XI. 240, 241—of the Aleutian islands, II. 465—destruction of moths in, XXI. 549.
 — in heraldry, XI. 325.
 Fürst (Julius), on the monosyllabism of the Semitic languages, XVII. 533.
 FURSTENWALDE, in Brandenburg, X. 361.
 FURTH, in Bavaria, X. 361.
 FURTHCOMING, in Scots law, X. 361.
 Furze. See Gorse.
 Fusaro, lake, XX. 239.
 FUSE, or Fuze, in artillery, X. 361; XI. 141, 142—Boxer's improvements on, III. 702.
 FUSEE, in clock-work, X. 361—in watches, VII. 28.
 FUSELI (Henry) X. 361—his definition of genius, 450—merits of his works, XVII. 79, 80—on Rembrandt, XIX. 6—on Sir T. Lawrence, XIII. 297—of minerals, XV. 63.
 Fusi, mountain XII. 688.

FUS—GAD

- Fusibility of metals, VI. 482.
 FUSIBLE METAL, X. 362.
 FUSIL, X. 362.
 — in heraldry, X. 362; XI. 330.
 FUSILIERS, or Fusileers, X. 362.
 Fusinieri (Dr), on electrical light, VIII. 548—on the transport of ponderable substances by lightning, 584.
 Fuslee era, VI. 676.
 Fuss (Mr), on the strength of materials, XX. 760.
 FUST, in architecture, X. 362.
 — (JOHN), X. 362; XVIII. 527, 528, 529—his types, XXI. 401.
 FUSTIAN, X. 363.
 — in criticism, X. 363.
 FUSTIC, dye-stuff, X. 363; VIII. 295, 318.
 FUSTURIUM, X. 363.
 Fusulina, fossil shells, XVII. 94, 93.
 Futteh Mohammed, VII. 599.
 FUTTEGHUR, town in Hindustan, X. 363.
 FUTTEHPOOR, town in Hindustan, X. 363.
 FUTTEHPORE, town in Hindustan, X. 363.
 FUTTOCKS, in a ship, X. 363.
 Future state, belief of North American Indians in, II. 681—not believed in by ancient nations, I. 462—never generally admitted among the ancient philosophers, *ib.*—Aristotle's disbelief of, *ib.*; Cicero's, 462, 463—conduct of the Athenians during a severe pestilence, a proof of their disbelief in, 460, 461—notions of the ancient pagans respecting, 459—formed no part of the Mosaic revelation, 473, 479—when the belief became prevalent among the Jews, 475, 476—faint indications of the doctrine in the books of the prophets, 474—passages in the books of Moses which have been supposed to relate to, 477—belief in, very general among the Greeks, IV. 216—how regarded in ancient Egypt, VIII. 439—the doctrine of, as a cause of the progress of Christianity, VI. 635, 636.
 — tense, X. 766.
 FUTWA, town in Hindustan, X. 363.
 FYNE, (Loch) in Argyleshire, X. 363; XIX. 795—its fisheries, III. 526—herring fishing in, IX. 636; XII. 235.
 FYZABAD, town in Hindustan, X. 363.

G

- G, letter of the alphabet, X. 364—in abbreviations, II. 18.
 GABARA, in antiquity, X. 364.
 GABARDINE, a dress, X. 364.
 Gabbro Rosso, in Tuscany, XXI. 393.
 GABEL, French tax, X. 364, 251; XXI. 72.
 Gabia, mountains in Brazil, X. 440.
 — GRANDE, Spanish town, X. 364.
 GABII, city of Latium, X. 364.
 GABINIA LEX, X. 364.
 Gabinius (Aulus), VIII. 471.
 GABION, in fortification, X. 364.
 GABLE of a house, X. 364; III. 510.
 GABLER (Jean Philippe), X. 364.
 GABRIEL SIONITA, X. 365.
 — angel, X. 365.
 — de Zerbis, II. 756.
 GAD, X. 365.
 GADAMES, oasis in Sahara, X. 365, XXI. 353.
 GADARA, city of Palestine, X. 365.
 Gadd's patent ropes, XIX. 410.
 Gaddesden (John of), XX. 816.
 Gaddi (T. and A.), painters, XVII. 62.
 Gadeni, Caledonian tribe, VI. 73; XIX. 742; XX. 41.
 GADES, X. 365. See Cadiz.
 GADLY, X. 365; IX. 245, 246—of the rein-deer, XIII. 236, 240.
 Gadidulus, genus of fishes, XII. 270.
 Gadidae, or Gadoids, family of fishes, XII. 268, 269.
 Gadolin of Abo, consequences of his introducing the term *specific heat* into science, I. 761.
 Gadolinite, mineral, XV. 90.
 Gadopsis, genus of fishes, XII. 273.

GAD—GAL

- GADOR, Spanish town, X. 365.
 Gadus, genus of fishes, XII. 270.
 Gaede (H. M.), his work on insects, IX. 12.
 GAELIC LANGUAGE, X. 365; XIII. 212; V. 374—bibles, IV. 704.
 GÄRTNER (Joseph), X. 365—on the pollen of flowers, V. 154.
 GAETA, town of Naples, X. 366; XX. 240—bay of, XV. 779; XX. 240.
 GAETULIA, district of Africa, X. 366.
 GAFF, X. 366.
 Gafforio (Franchino), on counterpoint in music, XV. 719.
 GAGE, X. 366.
 Gahnite, mineral, XV. 85, 87.
 Gaika, Kafir chief, XIII. 33.
 Gaikas, Kafir tribe, XIII. 33, 35.
 GAILLAC, in France, X. 366.
 Gairnaird, on the mollusca, XV. 327—on birds of paradise, XVI. 766.
 GAIN, in architecture, X. 366.
 GAINAGE, X. 366.
 GAINSBOROUGH, in Lincoln, X. 366.
 — (THOMAS), English painter, X. 367; III. 713; XVII. 79.
 Gairdner (Dr Wm.), his microscope, XIV. 775.
 Gaisford's edition of Suidas, XX. 801.
 Gait, muscles employed in, III. 42.
 GAUUS, or Caius, Roman jurist, X. 367—his Institutes, VI. 741, 744, 745; XVI. 258; XVII. 214.
 Gajrat, XI. 91.
 Gala-water, VIII. 408; X. 368.
 Galactite, mineral, XV. 75.
 GALACTODENDRON, milk-tree, X. 367; V. 206. See Cow Tree.
 GALACZ, or Galatz, in Moldavia, X. 367; XV. 312.
 GALESTUS, river, X. 367.
 Galago, genus of mammalia, XIV. 145.
 GALAPAGOS, islands, X. 367.
 GALAROA, Spanish town, X. 368.
 GALASHIELS, Scotch town, X. 368; XX. 41.
 GALATA, suburb of Constantinople, X. 368; VII. 301.
 GALATIA, X. 368—coins of, XVI. 378.
 GALATIANS, Epistle to the, X. 368.
 Galaxias, genus of fishes, XII. 248.
 Galaxidae, family of fishes, XII. 248.
 GALAXY, or Milky Way, X. 369; IV. 86; I. 843. See Milky Way.
 GALBA, Roman family, X. 369.
 — (Sergius Sulpicius), Roman Emperor, X. 369—reign of, XIX. 338.
 — genus of insects, IX. 106.
 GALBANUM, X. 369.
 Galbaut, governor of Hayti, XI. 256.
 Galbula, genus of birds, XVI. 774.
 GALDAR, Spanish town, X. 369.
 GALDO (Santa Maria de), in Spain, X. 369.
 Gale, order of plants, V. 207.
 Galeazzo of Mantua, VI. 618.
 Galecynus, fossil carnivorous animal, XVII. 171.
 Galeichthys, genus of fishes, XII. 261.
 Galeidae, family of fishes, XII. 322, 323.
 GALENUS (Claudius), or Galen, X. 370; XIV. 454; XX. 813—his anatomical knowledge, II. 752—character of his works, 754—on the nerves, 814—on the Egyptian method of cooling water, VII. 100—on insanity, XIV. 527—on bathing, IV. 501, 502, 504—on vision, XVI. 523; XX. 684.
 GALENA, city of Illinois, X. 369; XII. 362.
 — sulphuret of lead, X. 369; XIII. 298, 299; XV. 117, 243—silver in, VI. 498.
 GALENISTS, followers of Galen, X. 369; XIV. 454.
 — religious sect, X. 369.
 Galeocerdo, genus of fishes, XII. 324—fossil, 341; XVII. 118.
 Galeodes, genus of arachnides, III. 386.
 Galeopithecidae, family of mammalia, XIV. 150.
 Galeopithecus, genus of mammalia, XIV. 150—teeth of, XVI. 414, 452, 453.
 Galerites, fossil echinoidea, XVII. 99, 100.
 Galeritidae, echinoderms, XXI. 991.

GAL—GAL

- Galerius, Roman emperor, XIX. 350.
 Galeruca, genus of insects, IX. 150.
 Galerucitæ, tribe of insects, IX. 150.
 GALERUS, X. 370; II. 449.
 Galeus, genus of fishes, XII. 324—teeth of, XVI. 422.
 Galgacus, II. 247; V. 379; XIX. 340.
 Galgulus, genus of insects, IX. 164.
 Galiaceæ, nat. ord. of plants, V. 196.
 GALIANI (Ferdinando), political economist, X. 370—on free agency, I. 197, n. 2—on wealth, XVIII. 226, n.
 GALICIA, Spanish province, X. 372; XX. 493.
 — or Galizia, in Austria, X. 373; IV. 309, 312; XVIII. 153.
 Galien (Joseph), on æronautics, II. 169.
 Galileans, X. 374.
 GALILEE, X. 373; XVII. 182—sea of, 185—the chief scene of our Saviour's ministry, XII. 758, 759.
 GALILEO GALILEI, X. 374; XII. 660; I. 799—first to maintain the law of continuity in reasoning on motion, 258, 592—Hume's comparison between him and Lord Bacon, 585—on the acceleration of falling bodies, 592; II. 72—estimate of his genius, I. 593—his discoveries confirmatory of the Copernican system, 607—brought before the Inquisition; his sentence, 608—his telescope, 606; II. 87; XVI. 528; XXI. 117, 118—his astronomical discoveries, I. 607; III. 800—on the lever, I. 651—on gravitation, 674—on musical strings, II. 110—on the sun's spots, IV. 25, 26, 29—his discoveries in pneumatics, 449; I. 592; XVIII. 24—Descartes failed to appreciate the merits of, VI. 278—on the pendulum, I. 593; VII. 3—on projectiles, XI. 103, 107; I. 592—on hydrodynamics, XII. 70—probable inventor of the microscope, XVI. 529—on mechanics, I. 591—invention of the sector claimed by, XX. 30—on the law of transverse strain, 761.
 Galinier (M.), on the geology of Abyssinia, II. 55.
 Galitzin, XIX. 476.
 GALL, or bile, X. 382. See Bile.
 — or gall-nut, X. 382; V. 174—its use in dyeing, VIII. 281, 277, 293—oak-bark a substitute for, in dyeing, 304, n. 3—other substitutes for, 305, 306—in making ink, XII. 382—insects producing galls, IX. 172.
 — (FRANCIS JOSEPH), founder of phrenology, X. 382—on phrenology, XVII. 556, 557 *et seq.*, 673—objections to his system, 674—his connection with Spurzheim, XX. 519.
 — (James), his alphabet and printing for the blind, IV. 776; XVIII. 554.
 — OF GLASS, X. 382.
 — (St), in Switzerland, X. 384; XX. 882.
 Gall-bladder, III. 62.
 GALLAND (Antoine), X. 385.
 GALLAS, Abyssinian tribe, X. 385; II. 56, 222.
 Galle (Dr), his discovery of the planet Neptune, IV. 93; I. 830—on the inner ring of Saturn, IV. 92.
 Galleas, XX. 123.
 GALLEGOS, Spanish river, X. 385.
 GALLEGOS (San Felices de los), Spanish town, X. 385.
 — (Galicians), X. 372.
 — painter, XVII. 75.
 GALLEON, large ship, X. 385; XX. 123.
 GALLEOT, small galley, X. 385.
 Galleria, genus of insects, IX. 218.
 GALLERY, in fortification, X. 385.
 — in the Fine Arts, X. 385—National Gallery, London, XIII. 674; in Edinburgh, VIII. 397.
 GALLEY, X. 385; XX. 117, 119, 123.
 Galleys, as a punishment, XVIII. 575.
 GALLI, priests of Cybele, X. 385; VII. 422.
 GALLIA, or Gaul, X. 385, I. See Gaul.
 GALLIC ACID, X. 386; VIII. 281; VI. 515; XIII. 306—in oak, XX. 166, 169.

GAL—GAM

- Gallic alphabet, II. Plate.
 Gallichthys, genus of fishes, XII. 297.
 GALLICISM, X. 386—in Gibbon's style, 615.
 Gallicolæ, tribe of insects, IX. 192.
 GALLIENUS (P. Licinius), emperor of Rome, X. 386—his massacre of the Byzantines, VI. 43—reign of, XIX. 348.
 Gallini on the love of dancing, VII. 644.
 Gallinaceous birds, XVI. 784; XVII. 633—their habits as to pairing, III. 181.
 Gallinsecta, family of insects, IX. 171.
 Gallinula, genus of birds, XVI. 807.
 Gallinules, birds, XVI. 807.
 Gallio, last Roman commander in Britain, V. 380.
 GALLIPOLI, town in Naples, X. 386; XX. 242.
 — in European Turkey, X. 386.
 Gallo-Græcia, X. 368.
 Gallocanta, Spanish lake, III. 393.
 GALLOIS (Jean), French author, X. 386—his opposition to the new geometrical analysis, I. 650.
 — (M. de.), his iron works, XII. 541.
 GALLON, measure, X. 386; XXI. 808, 799 *et seq.*—standard gallon, 802, 804.
 GALLOON, a kind of lace, X. 386.
 GALLOWAY, X. 386; XIII. 98—horse, XI. 656; XIII. 100—cattle, II. 341; XIII. 100.
 — (Eljah), his feathering paddle-wheel, XX. 656—his steam-boiler, 616.
 — (THOMAS), X. 387—his article in this work on the figure of the earth, IX. 547, n.—on the solar motion, IV. 87; I. 846.
 — Mull of, X. 386.
 — New, X. 386; XIII. 100.
 Gallows. See Gibbet.
 GALLS, X. 387—of Aleppo, II. 463. See Gall.
 Galluppi on syllogisms, XIII. 624, n.
 GALLUS (C. Cornelius), Roman poet, X. 387.
 — (Cæsar), VII. 304.
 — (Cestias), prefect of Syria, XII. 773.
 — Roman emperor, XIX. 348.
 — genus of birds, XVI. 788.
 Galmei, mineral, XV. 100.
 GALSTON, in Ayrshire, X. 387.
 GALT (John), Scottish novelist, X. 387—character of his novels, XIX. 282—his Life of West, XXI. 836.
 Galtee mountains, XXI. 285.
 Galton iron bridge, XII. 584, 586.
 — (Mr), African traveller, II. 211.
 GALVANI (Aloisio, or Luigi), X. 387; I. 959—contrasted with Volta, 958—his first experiments on the nervous system and electricity, 959—progress of his views on animal electricity, 960—his great merit, *ib.*
 Galvanic battery, XXI. 99, 610 *et seq.* See Voltaic Electricity.
 GALVANISM, X. 388—Fabbioni on the chemical origin of, I. 964—discovery of, I. 739, 958; VIII. 530; XXI. 609—Volta on, I. 963—Sir H. Davy's chemical discoveries by means of, VII. 668, 669—animalcules supposed to have been produced by, III. 212—Oken on, XVI. 500—general phenomena of, XXI. 621—on living animals, 633—its effects after death, 634.
 GALVANIZED IRON, X. 388.
 Galvano-plastic printing, XVIII. 554.
 Galvanography, XVIII. 554.
 Galvanoglyphy, XVIII. 544.
 Galvanometer, I. 976; XXI. 99—marine, 97, 110—mirror, 99, n., 109.
 Galvanoscope, gold-leaf, XXI. 643.
 GALVESTON, in Texas, X. 388.
 GALVEZ, Spanish town, X. 388.
 GALWAY, Irish county, X. 388—fisheries of, IX. 627, 634—agr. stat., XII. 516, 517.
 — town, X. 391.
 GAMA (Vasco da), X. 393, 470, 712; XVIII. 382, 163—his squadron, XX. 124.
 GAMALIEL, X. 393.
 Gamaita (General), IV. 836.
 Gamasus, genus of arachnides, III. 388.
 Gambart (Jean), astronomer, I. 858—his comet, *ib.*
 Gambasio, a blind sculptor, IV. 781.

GAM—GAR

GAMBEER, X. 393; V. 196; VI. 332.
 GAMBIA, river, X. 393; II. 214; XVII. 646; XX. 51—temperature of the valley of, 50.
 Gambier's islands, II. 694; XVIII. 282.
 GAMBLING, or Gaming, X. 394—in China, VI. 567—bills for gambling debts, IX. 445.
 GAMBOGE, X. 395; V. 186—in Cambodia, VI. 113.
 — order of plants, V. 186.
 GAME-LAWS, X. 395—qualification for killing game, XX. 210.
 GAMELIA, marriage presents, X. 397.
 GAMELION, Athenian month, X. 397.
 GAMES, public, in antiquity, X. 397—Egyptian, VIII. 441, 448—funeral, X. 344—of the amphitheatre, II. 729, 731—of the circus, VI. 731, 734.
 Gammari, trout fed on, XII. 242.
 Gammell (Ernest), action against, for salmon fishing, IX. 601.
 GAMMONING, sea term, X. 399.
 GAMMUT, in music, X. 399—Chinese, VI. 581.
 GAMONEDA, mountains in Spain, X. 399.
 Gamrie, church of, IV. 413.
 GANDESA, Spanish town, X. 399.
 GANDHARBA, X. 399.
 GANDIA (Huerta de), district and city of Spain, X. 399, 400.
 Ganessa, Indian astronomer, II. 487.
 Ganganelli (Pope). See Clement XIV.
 Gang-robbery, in India, XI. 521, 522.
 Gangas, birds, XVI. 791.
 GANGES, river, X. 400, 401; III. 735; XI. 449, 450; XVII. 606, 646—resort of pilgrims to, IV. 643—inundations of, 648; XVII. 606—navigation of, IV. 651—aqueduct of, III. 336—mud deposited by, XV. 140; XII. 621; XVII. 586—delta of, ib.—sources of, X. 634; XVII. 601—slope and velocity of, ib.—gangetic dolphin, XVI. 445—physical characteristics of, 87. See Sunderbunds.
 Ganglia, or ganglions, XVII. 669 *et seq.*—lymphatic, II. 805—nervous, 811—in the lower animals, III. 176—invertebrata, 185—in mollusks, XV. 345 *et seq.*—ganglionic cells, XVII. 650—insects, IX. 43, 55—globules of, II. 811—ganglions in the domestic animals, XXI. 558.
 GANGOOTRI, X. 401, 400; XI. 469.
 GANGPOOR, in Hindustan, X. 401.
 Gangrene, XVII. 690—surgical treatment of, XX. 826.
 Ganita (Bija), Hindu treatise on algebra, II. 487.
 GANJAM, town in Hindustan, X. 401.
 GANNAT, town in France, X. 401.
 Gannery (M.), his escapement, VII. 13.
 GANNET, bird, X. 401; III. 181; XVI. 814.
 Ganocephala, fossil reptiles, XVII. 133.
 Ganodus, genus of fossil fishes, XVII. 119.
 Ganoid, order of fishes, XII. 217, 316, 317—fossil, 332, 333; XVII. 119.
 Ganshaw, in Georgia, VIII. 634.
 GANTLET, or Gauntlet, X. 401.
 GANYMEDES, in mythology, X. 401.
 GAOL, X. 401. See Prisons.
 — DELIVERY, X. 401.
 GAONS, Jewish doctors, X. 401.
 GAP, town in France, X. 402.
 Gapers, shells, XV. 350.
 Gara (Lough), XIX. 420; XX. 329.
 GARACHICO, in Teneriffe, X. 402.
 Garama, IX. 530.
 GARAMANTES, Libyan race, X. 402; IX. 530.
 Garanceux, VIII. 318 and *n.*
 Garancine, VIII. 318 and *n.*
 Garay (Blasco de), his steam-vessel, XX. 636.
 GARBE, in heraldry, X. 402; XI. 333.
 Garcia (Don Jose H.), on fortification, IX. 836.
 GARCILASO DE LA VEGA, Spanish poet, X. 402; XVIII. 113.
 GARD, in France, X. 403, 277.
 GARDA (Lago di), X. 404; XII. 637; XIII. 644.
 GARDANT, in heraldry, X. 404; XII. 332.
 GARDELEGEN, town in Prussian Saxony, X. 404.

GAR—GAS

Garden (Dr), of Charlestown, on the *Gymnotus electricus*, VIII. 575.
 — (Dr), on the siren, XIX. 85.
 — fruit, XI. 697, 702—kitchen, 697—forcing, 719—flower, 745—calendar, 758—walks in, 747—floating gardens in Mexico, XIV. 722—of the crystal palace, Sydenham, XX. 892—town garden, III. 494—at Kew, XIII. 75—hanging gardens at Babylon, IV. 341. See Horticulture.
 — seeds, II. 337.
 Gardener's calendar, XI. 758.
 — turnip cutter, II. 284.
 GARDENING, X. 404—Landscape, XVII. 771—Chinese ornamental, VI. 593—in Egypt, VIII. 428, 431. See Horticulture.
 Gardie (La), general, XX. 848.
 GARDINER, in the State of Maine, X. 404.
 — (COLONEL JAMES), X. 404; XI. 178.
 — (STEPHEN), Bishop of Winchester, X. 404; VIII. 706, 708 *et seq.*
 — (William), on the botany of Forfarshire, IX. 781.
 Gardiner's Tables of Logarithms, XIII. 555.
 Gardner (Mr), on phreno-mesmerism, XX. 440.
 Gargano (Monte), XX. 236.
 Garget, in domestic animals, XXI. 571.
 Garibaldi, his victory at Volturno, in 1860, XXI. 670.
 Gar-fish, XII. 264.
 Garigliano, river, XII. 638; XX. 237.
 Garloch, II. 32.
 Garlick, culture of, XI. 741.
 Garlton Hills, XI. 177.
 Garner (Mr), on the boring of shell-fish, XV. 353.
 Garnerin (Mons.), his descent in a parachute, II. 179.
 GARNET, X. 405; XV. 84; XVII. 623—its crystallisation, VII. 562—rock, XV. 135—specific gravity of, XII. 88—lenses of, XIV. 768—doublets of, 774.
 — part of the tackle of a ship, X. 405.
 Garnett (Richard), his contributions to Celtic philology, XVII. 530.
 Garnier (Marquis), on agriculture, XVIII. 236—on price, 243—on indirect taxes, XXI. 57.
 GAROFALO (Benvenuto), painter, X. 405.
 GARONNE, river, X. 405, 240, 632; XIII. 696; XVII. 647.
 — (HAUTE), department of France, X. 405.
 Garouste's burning mirror, VI. 10.
 Garraway's coffee-house, XXI. 89.
 Garreau on the absorption of plants, V. 103—on the exhalation of leaves, 104—on the heat of Arum while flowering, 148.
 Garrett's horse-hoe, II. 275.
 GARRICK (David), X. 406; XVI. 283; XXI. 174, 175—the stage improved by, VIII. 166—anecdote of him and Fielding, IX. 540, *n.* 3—his intimacy with Dr Johnson, XII. 796; with Goldsmith, X. 708—excellence of his reading, XXI. 172.
 GARRISON, X. 407—artillery, III. 693.
 — (W. Lloyd), emancipationist, II. 43.
 GARROTE, X. 407.
 Garrots, birds, XVI. 816.
 GARROVILLAS, Spanish town, X. 407.
 GARROW HILLS, in Hindustan, X. 407.
 Garrulus, genus of birds, XVI. 764.
 Garry, river, XVII. 455.
 Garryaceæ, nat. order of plants, V. 208.
 GARSTANG, in Lancashire, X. 407.
 GARTER, order of the, X. 407; XI. 340—institution of, XIII. 117; VI. 622.
 — principal king-at-arms, X. 408; XI. 320.
 — in heraldry, X. 408.
 GARTH (Sir Samuel), X. 408—example of wit from, XXI. 895.
 GARVE (Christian), X. 408.
 GAS, X. 408—term first used by Helmont, XI. 308—method of determining the relative density of gases, I. 727—trans-

GAS—GAS

mission of sound through, II. 104—expansion by heat, I. 935; XI. 268—coefficient of expansion of, I. 957 and *n.* 4—Gay Lussac on, X. 442—Dalton's researches on, I. 934 (see Dalton)—laws of mixed gases, 935—specific heat of gases, 953—effects of electricity on, VIII. 597—diffusion of, 26—condensation of, XI. 272—diffusion of heat through, 262; VI. 783—experiments with two gases, XII. 102—collection of waste gases of blast furnaces, 552—specific gravities of, VI. 448; XII. 89—atomic volume of, VI. 449—some of them reducible to liquids, XI. 272; I. 982; XX. 563—illuminating power of, X. 428—coal gas, 409 *et seq.*; XIX. 615—used as fuel, X. 322—law of Mariotte and Boyle on the compressibility of, I. 958—exhalation of, by leaves, V. 104—effects of, on leaves, 106; on plants, XVIII. 135—Dr Henry on, XI. 316—refractive powers of gases, XVI. 558—in lighthouses, XIII. 480—general relations of gases, XX. 563—solidification of, ib.
 Gas-coal, VII. 118.
 GAS-LIGHT, X. 409—in lighthouses, XIII. 480—in Edinburgh, VIII. 406—Glasgow, X. 650—New York, XVI. 231—London, XIII. 665.
 Gas-meter, X. 422—wet, ib.—dry, 423.
 Gascogne (Alphonse), his work on insects, IX. 23.
 — French province, X. 434.
 Gascoigne (Mr), inventor of the micrometer, XIV. 742.
 Gascon (John), his adventure against Algiers, II. 569.
 GASCONY, French province, X. 434, 277.
 Gaseous poisons, XIV. 435; XVIII. 135—gaseous elements in the crust of the globe, XVII. 618.
 — steam, XX. 570.
 GASKET, X. 408.
 Gasometers, X. 418, 420.
 Gaspar Soares, iron-works at, V. 299.
 Gasparis (M. de), asteroids discovered by, I. 859.
 GASSE, in Lower Canada, X. 434.
 GASSENDI (Pierre Gassend), X. 434—contrast between him and Descartes, I. 70—his diligent study of Bacon, ib.—his partiality for Epicurean physics, 71—his argument against Descartes, ib.—his claim to the discovery of the doctrine concerning the origin of our knowledge, 72—his advantage over Descartes in renouncing the doctrine of innate ideas, 73—his merits as a philosopher and writer, ib.—his doctrine of ideas, 109—his orthodoxy as a Roman Catholic, 248—his followers, 107, 108—his astronomical labours, 611; III. 801—meteoric stone seen by, XIV. 630.
 Gassiot (M.), African traveller, II. 211.
 — (Mr), chemical decomposition by means of the pile, obtained by, XXI. 619—his water-battery, ib., 620—on stratification in electrical discharges, 630—sounds from electric currents observed by, 631—his process of converting daguerreotype plates into engraved plates, 636.
 Gassner's exorcismal cures, XX. 417.
 Gastrochisma, genus of fishes, XII. 298, 296.
 Gasteronemus, genus of fossil fishes, XII. 345.
 Gasteropelecus, genus of fishes, XII. 246.
 Gasterophilus, gad-fly, XXI. 569.
 Gasteropoda, class of mollusks, XV. 363, 322, 223—fossil, XVII. 108—extinct genera of, 115.
 — monœcia, XV. 369.
 — diœcia, XV. 375.
 Gasterosteus, genus of fishes, XII. 210, 281.
 Gasterotokeus, genus of fishes, XII. 315.
 Gaston, earl of Foix, VI. 613; XIII. 18.
 Gastornis, genus of fossil birds, XVII. 155.
 Gastranæ, fossil mollusks, XVII. 108.
 GASTRIC JUICE, X. 438; II. 782; VI. 523; XVII. 659.

GAS—GAY

Gastritis, in cattle, XXI. 567.
 Gastrobranchus, genus of fishes, XII. 228—its respiratory organs, III. 113.
 Gastrochœna, genus of mollusks, XV. 350—fossil, XVII. 108.
 Gastrochœnidæ, family of mollusks, XV. 350.
 GASTROTOMY, in surgery, X. 438.
 Gastrus, genus of insects, IX. 246.
 GATA, towns in Spain, X. 438, 439.
 — (CABO DE), headland, X. 439.
 — (RIO DE), in Spain, X. 439.
 — (SIERRA DE), in Spain, X. 439.
 GATAKER (Thomas), X. 439.
 GATEHOUSE, in Kirkcudbright, X. 439.
 GATES (Horatio), American general, X. 439.
 GATESHEAD, in Durham, X. 439.
 GATH, in Palestine, X. 439; XVII. 182, 514.
 Gastrone, town, IX. 530.
 GATSHINA, X. 440.
 Gatterer (Prof.), on denary numerals, III. 579.
 Gattoni (Abbate), his Æolian harp, XV. 709.
 Gaubil, his work on insects, IX. 19.
 GAUCIN, Spanish town, X. 440.
 GAUDEN (John), X. 440.
 GAUDENS (St), in France, X. 440, 405.
 Gaudichaud on the physiology of plants, V. 102.
 Gauguin's gas and vapour battery, XXI. 618.
 GAUGE, or GAGE, X. 440—in gas-making, 422—in railways; see Guage.
 GAUGING, X. 440; XIV. 524—in brick building, V. 733.
 GAUL, X. 440, I. 385—Druids in, VIII. 184—Greek colony at Marseilles, ib.—coinage of, XVI. 361—Cæsar's campaigns in, XIX. 324—Caligula's expedition to, 335.
 Gauls, V. 373—their belief in the immortality of the soul, VI. 636, 637—their invasion of Germany, X. 574—Rome taken and burnt by, XIX. 302.
 Gault, in geology, XV. 110.
 Gaultier on the skin, II. 834.
 Gaunt (John of), V. 685; XIII. 178; VIII. 685.
 Gauntlet, X. 401.
 GAUSS (Karl Friedrich), X. 440; I. 993, 995—his method of computing secular inequalities, 811—his researches on terrestrial magnetism, 993; XIV. 17—his new magnetical instruments, I. 993—his magnetical observations at Göttingen, 994—on the manner of inscribing a polygon in a circle, II. 564; I. 701, 993—his correction of Laplace's theory of capillary attraction, XII. 100—his mathematical theory of terrestrial magnetism, I. 994—his theorems concerning attractions, ib.—his great merit, 995—on the general theory of quadratic factors or impossible roots, 712—on equations, IX. 308—on the planets Pallas and Vesta, IV. 68, 69—on comets, VII. 168, 181—on the micrometer, XIV. 744—on probability, XVIII. 634, 635.
 Gautama, V. 724.
 Gauthy (M.), on iron bridges, XII. 575, 579—on the strength of stones, XX. 717, 718, 759.
 GAUZE, X. 440—wire-cloth, ib.—manufacture of silk gauze at Paisley, XVII. 89—weaving of, XXI. 780.
 GAVEL-KIND, X. 441; V. 386; XVIII. 516.
 Gaveston (Pierce), VIII. 681.
 GAVIA, mountains in Brazil, X. 440.
 GAVIA-GRANDE, Spanish town, X. 440.
 Gaviolis, reptiles, XIX. 23.
 Gaviols, XIX. 23—teeth of, XVI. 437.
 GAVIAO, Portuguese town, X. 441.
 GAVOTTA, dance-tune, X. 441.
 GAWELGUR, fortress in Hindustan, X. 441.
 Gawler (Colonel), governor of South Australia, IV. 294.
 Gawnagh (Lough), VI. 347.
 Gay (Claudio), his work on Chile, IX. 24.

GAY—GEL

- GAY (John), poet, X. 441—moral tendency of his Beggars' Opera, VIII. 165—death of, XVIII. 332.
— (Rev. Mr.), his dissertation on virtue, I. 170—suggested to Hartley the idea of association, 380.
- GAY-LUSSAC (Nicolas François), X. 442; I. 939, 940—his balloon ascents, II. 181—183; I. 939—his portable barometer, IV. 466—on assaying, III. 771—on the expansion of the gases by heat, I. 935—on electricity, VIII. 580—on the electricity of the torpedo, 573—his law of volumes in gases uniting chemically, I. 938—on capillary attraction, XII. 92, 94, 95, 98—his miscellaneous experiments, I. 940—his analysis of cast-iron, VI. 179—on evaporation, IX. 409—on gases, XX. 562, 563—on the elastic force of gas produced by the ignition of gunpowder, XI. 109.
- GAYAH, town in Hindustan, X. 442.
- Gayal, in zoology, XIV. 215.
- GAYATRI, a verse of the Vedas, X. 442.
- Gaylussite, mineral, XV. 98.
- GAZA, in Palestine, X. 443; XVII. 182, 514—taken by Alexander, XIII. 767.
- GAZELLE, X. 443; XIV. 210; VIII. 432.
- GAZETTE, X. 443—London Gazette, XVI. 182—de France, 196.
- GAZTELUGACHE, Spanish island, X. 444.
- Gean tree, XI. 712.
- Geary (Admiral), V. 494.
- Gebel-es-Silsileh, in Egypt, VIII. 503.
- Gebel-et-Teyr, in Egypt, VIII. 504.
- Gebhardt (J. G.), his work on insects, IX. 18.
- Gebler (Francis), his work on insects, IX. 15.
- Gecarcinus, genus of crustacea, VII. 541.
- Gecko, reptile, XIX. 35.
- Geckotidae, reptiles, XIX. 35.
- Ged, the common pike, XII. 254.
- (WILLIAM), inventor of stereotyping, X. 444; XVIII. 549.
- GEDDES (Alex.), X. 444—on the Scottish language, VIII. 797—on Tyndale's Bible, XXI. 400.
- Gedrosia, march of Alexander the Great through, XIII. 771.
- GEELONG, in South Australia, X. 445; IV. 288, 290 *et seq.*
- Geer (Charles de), Baron, his work on insects, IX. 4—his classification of insects, 5—on ants, III. 261.
- Geerardt, Prince of Orange assassinated by, XI. 571.
- Geez language, II. 57.
- GEFLE, town in Sweden, X. 445; XX. 864.
- GEHENNA, X. 445.
- Gehin (J. B.), his catalogue of insects, IX. 23.
- Gehlenite, mineral, XV. 73.
- Geijer, Swedish author, XIX. 700.
- Geisler (Frederick), on anonymous books, IV. 711.
- Gekröstein, mineral, XV. 96.
- GELA, in Sicily, X. 445; XX. 899—taken by the Carthaginians, VI. 282.
- Gelalæan era, VI. 674.
- GELASINE, name of two popes, X. 445.
- GELATINE, or Jelly, X. 445; IX. 757; XVII. 654—its qualities as a nutriment, VIII. 19—abounds in some fishes, III. 93—its use in photography, XVII. 549.
- GELDERLAND, or Guelderland, X. 446; XI. 79—climate, 582.
- Gelee (Claude). See Claude Lorraine.
- Gelleus' hive, III. 295.
- GELL (Sir William), X. 446—his work on Pompeii, XVIII. 288.
- GELLERT (C. Furchtegott), German author, X. 446.
- (M.), on capillary attraction, XII. 90.
- Gellibrand (Henry), on logarithms, XIII. 554, 555—on the compass, XVI. 5.
- GELLIUS (Aulus), X. 446; XVII. 519.
- GELNHAUSEN, town of Hesse-Cassel, X. 446.
- GELON, tyrant of Syracuse, X. 446—his defeat of the Carthaginians, VI. 281—reign of, XX. 899.

GEM—GEN

- GEM, X. 446; XV. 87; XVII. 623—mode of cementing, VI. 368—crystallization of, VII. 555, 562, 563—counterfeit, VIII. 113—in Germany, X. 584—lenses of, XIV. 765 *et seq.*—microscopic cavities in, 806—magnetism of 27—cutting and polishing, XIII. 231. See Diamond, Pearl, Ruby, Sapphire, &c., and the Geographical articles.
- GEMARA, second part of the Talmud, X. 447; XXI. 15, 16.
- Gemimus of Rhodes, X. 501.
- GEMINI (the Twins), constellation, X. 447; IV. 12, 80.
- Geminus on geography, X. 467.
- GEMISTUS, or Georgius Pletho, X. 447.
- Gemmation, mode of reproduction, in mollusks, XV. 331—333.
- in plants, V. 68.
- GEMINIANI (Francesco), violinist, X. 447.
- Gemminger (M.), his work on insects, IX. 23.
- GEMONIE SCALE, X. 447.
- Gempylus, genus of fishes, XII. 296.
- GENALGUACIL, Spanish town, X. 447.
- GENDARMERIE, X. 448, 272.
- GENDER, in grammar, X. 448, 747, 789.
- Gené (Giuseppe), his works on insects, IX. 17.
- GENEALOGY, X. 448.
- GENERAL, X. 448.
- ASSEMBLY of the Church of Scotland, X. 448; III. 775; XVIII. 493—discontinued by James I., V. 384.
- of the Free Church, XVIII. 495.
- GENERALISSIMO, X. 448—qualifications of, XXI. 698, 699.
- Generalization, XIV. 590.
- GENERATING LINE, in geometry, X. 448.
- Generation of animals—of vertebrata, II. 772—mammalia, 774—animalcules, III. 199—ants, 264—bees, IV. 581, 584—insects, IX. 74—mollusks, XV. 331 *et seq.*—batrachian reptiles, XIX. 75; ophidian, 50—zoophytes, XXI. 973 *et seq.*—points of resemblance and difference in reproduction of plants and animals, III. 170—hybrids generally barren, 174, 175—equivocal generation, 175—species said to be produced from vegetable seeds, 200, 204—succession of blind children in families, IV. 777—castration, VI. 329. See Fecundation, Reproduction.
- (organs of), in man, III. 3—anatomy of, 68—their muscles, 39—in brutes, 113—crustacea, VII. 539.
- GENERATOR, in music, X. 448.
- Genesee river, falls of, XVI. 214.
- harbour, XVI. 214—flats, 215.
- GENESIS, book of, X. 448; I. 449 *et seq.*; XVII. 400.
- in geometry, X. 448.
- GENESIUS (Josephus), X. 448.
- Genet, one of the mammalia, XIV. 166.
- GENETHLIACI, X. 448.
- Genetta, genus of mammalia, XIV. 166.
- GENEVA, X. 449; XX. 882—Sir James Mackintosh on the independence of, IV. 391—Bible, 702; XIII. 127—library at, 424—mean temperature of, XX. 889—population and mortality, XV. 621, 622—stop, in watches, VII. 28—coins, XV. 441—political troubles in the year 1782, VIII. 240—suicides in, XX. 800.
- LAKE OF, X. 449; XIX. 633; XX. 888—its temperature at different depths, VI. 777—variation of its level, XX. 889—charr in, XII. 241—salmon trout of, 242.
- or Gin, X. 449, 629; VIII. 51.
- town in Ontario, X. 449.
- GENEVIEVE (Sainte), patron saint of Paris, X. 449.
- library of, XIII. 408.
- (St), town in Missouri, XV. 281.
- GENÈVRE, Mont, X. 450.
- Genga (Bernardin), his surgical anatomy, II. 766.
- GENGHIS-KHAN, Tartar chief, X. 451; III. 745; XI. 478—Bukhara laid waste by, V. 759—his invasion of China, VI. 559, 561; III. 745.

GEN—GEO

- Genleys on hydraulics, XII. 140.
- GENII, X. 450—of Mohammedans, XV. 302.
- GENIL, river of Spain, X. 450.
- GENITIVE CASE, in grammar, X. 450, 748.
- GENIUS, tutelary spirit, X. 450—Greek and Roman belief respecting genii, III. 310. See Daemon.
- in literature, X. 450—its relation to insanity, III. 321.
- of a language, XIII. 188.
- GENLIS (Comtesse de), X. 451.
- Gennaro (San). See Januarius (St).
- Gennes (M. de), his mechanical powerloom, XXI. 787.
- Gennesereth, Lake of, XVII. 185—land of, 186.
- Gennet, order of the, XIII. 120.
- GENOA (Duchy of), X. 451; XIX. 640—city of, X. 452—Academy of Sciences at, II. 63—commerce of, VII. 186—its colonies on the Black Sea in the thirteenth century, IV. 745—seized by Napoleon, X. 136, n. 2—coins, XV. 441, 443—early navigation of, XVI. 2—in-surrection at, in 1849, XII. 658—manufactures of, XIX. 634—vessels trading with, in 1850—54, 635—weights and measures of, XXI. 805, 811—university of, 492.
- Gulf of, X. 454.
- township in New York, X. 454.
- GENOVESI (Anthony), X. 454; I. 202.
- GENS, in Roman antiquity, X. 455.
- GENSERIC, king of the Vandals, X. 455, 577—sack of Rome by, XIX. 363.
- GENTIAN, plants, X. 456; V. 114, 200; XI. 748.
- Gentianaceæ, nat. order of plants, V. 200.
- GENTILE, X. 456—relation of the Gentiles to the Mosaic law, I. 467.
- GENTILESCHI (Horatio), painter, X. 456.
- GENTILIS (Albericus), X. 456—his merits as the precursor of Grotius, I. 25, 26, and n. 1—an apologist for Machiavelli, 233.
- GENTLEMAN, X. 456; VII. 205.
- USHER of the Black Rod, X. 456—gentlemen ushers of the privy chamber, XI. 775.
- Gentleman's Magazine, VI. 350.
- Gentlemen-at-arms, X. 456; XI. 775.
- GENTLEMEN-PENSIONERS, X. 456; XI. 776.
- Gentles, larvæ of flies, used for bait, III. 155.
- GENTOOS, X. 457; XI. 474.
- Genz on the balance of power, IV. 387, 388, 390.
- Genucius, Roman tribune, XIX. 300.
- Genuineness of the Scriptures, XIX. 829.
- GENUS, X. 457.
- in music, X. 457.
- in natural history, X. 457—definition of, V. 175—sub-genus, 175—distribution of genera of plants over the globe, 222—uncertain limits of genera, XVI. 736.
- GEOCENTRIC, in astronomy, X. 457.
- Geocorisæ, family of insects, IX. 161.
- Geocrinus, fossil echinoderms, XVII. 98.
- Geodes, in lithology, XV. 132, n. 1.
- GEODEST, X. 457—figure of the earth from, IX. 560.
- Geoffroy, his work on insects, IX. 6—on pollen, IV. 572—a bad authority on ants, III. 261.
- OF MONMOUTH, X. 457—his account of Stonehenge, XX. 709—William of Newburg's opinion of his history, XXI. 868.
- SAINT-HILAIRE (Etienne), X. 457.
- Geognosy, XV. 129.
- GEOGRAPHY, X. 459—history of geographical discovery, *ib.*—mathematical, 479—physical, XVII. 569—political, *ib.*—descriptive, *ib.*—geographical academies of Venice and Lisbon, II. 62—D'Anville's improvements of, III. 289—mode of teaching it to the blind, IV. 777—improved by the Crusades, VII. 534—Edrisi's work on, VIII. 412—geographical distribution of plants, V. 219, 222; XVII. 624—of animals, III. 174;

GEO—GEO

- II. 712; XVII. 630—of birds, 633—of insects, IX. 63—reptiles, XVII. 634—serpents, XIX. 50, 51—fishes, XII. 329; XVII. 634—illustrations of, from coins and medals, XVI. 351—benefits it derives from palæontology, XVII. 91—knowledge of, among the Persians, 430—its relations to philology, 526, 527—Strabo's, XX. 744. See Earth, Physical Geography, and names of countries, towns, rivers, &c.
- Geokronite, mineral, XV. 119.
- GEOLOGY, X. 496; XV. 127; XVII. 570, 586—internal structure of the earth, I. 791—the principle on which the Mosaic account of the Creation is to be interpreted in reference to geology, 455—cases of subsidence in the earth's surface, II. 51—geology of Mount Etna, 192—America, 670—Alps, 626—Andes, III. 129—Assam, 763—England, VIII. 716—Egypt, 423—its connection with the origin of soil, II. 389; with archaeology, III. 419—emergence of islands from the ocean, near the Azores, IV. 336—Falls of Niagara, VI. 135—internal heat of the earth, 768—scriptural date of the Creation, 677—final conflagration, VII. 241—the Deluge, 722—erratic blocks, 723—scratches on rocks, *ib.*—Dolomieu on, VIII. 95, 96—geological relations of insects, IX. 72—the earth's figure proves its former fluidity, 575—elevation of Norway, XVI. 319, n.—geological distribution of gold, XV. 231—of the Himalayas, XI. 443—of the state of New York, XVI. 214—first appearance of man on the earth, XI. 540; XVII. 641—value of palæontology to, 91—table of strata, and order of appearance of animal life on the earth, 92—of Scotland, XIX. 790—geological theory of volcanoes, XXI. 606—See Palæontology, Fossil, and the geographical articles in general.
- Museum of, in London, XIII. 674; XXI. 323.
- GEOMANCY, X. 496.
- Geomelania, genus of mollusks, XV. 375.
- GEOMETRIC PROGRESSION, X. 563; XVIII. 639.
- Geometrical proportion, II. 501—magnitude, X. 506.
- GEOMETRY, X. 497—history of, *ib.*—plane, 507—of solids, 532—the genius of the Greeks beautifully displayed in, I. 551, 696, 697—contributions to, by Euclid, Archimedes, and Apollonius, 551—geometrical analysis, *ib.*—works of Regiomontanus, *ib.*—introduction of trigonometry and decimal fractions, *ib.*—Werner, Benedetto, Maurolycus, and Cavalleri, 552—exhaustions of the ancients, *ib.*, 553—idea of quantities infinitely great and small introduced by Kepler, 554—generation of solids, *ib.*—Kepler's view of the composition of circles, *ib.*—observations on lines and areas, *ib.*—purpose served by the doctrine of quantities infinitely small in size and infinitely great in number, 555—the cycloid, *ib.*—results of the application of algebra to, 560—Descartes' Geometria, *ib.*—Fermat's method of drawing tangents to curves, 561—geometric and algebraic method of treating quantity, *ib.*—high value set on the geometrical construction of problems by the Greeks, 699—attempts to ascertain relation of diameter to circumference, *ib.*—incommensurability of the circle, 700—best elementary works on, *ib.*, n. 2—elementary plane geometry rests on the combined properties of the straight line and the circle, *ib.*—instruments required in solving the common problems, 701—lines and curves of the second order, *ib.*—improvement made in trigonometry during the last century, *ib.*—Descartes' discoveries, 710—application of algebra to, VI. 278; II. 486—Dr Beddoes on the nature of evidence in, IV. 566—characters of abbreviations in,

GEO—GEO

- VI. 419—intimate connection of dynamics with, VIII. 358—applications of the fluxional calculus to, IX. 744—Egyptian knowledge of, VIII. 442—its use in joinery, XII. 805—its connection with geography, X. 467. See Angle, Circle, Trigonometry, &c.
- GEOMETRY (analytical), X. 542; I. 807.
- (New), state of the sciences when Newton arose, I. 634—problem of the quadrature of the circle solved by, ib.—Wallis's arithmetic of infinites, ib.—discovery of fluxions by Newton, 635; IX. 672—Newton the first, and Leibnitz the second, inventor of the new infinitesimal analysis, I. 636—controversy relative to the discovery, 637 *et seq.*—its vast importance, 640, 641—steps by which the mathematical sciences were prepared for the new analysis, 641—this analysis first appeared in the method of exhaustions, ib.—advanced a step in Cavalieri's method of indivisibles, ib.—Descartes' application of algebra to the geometry of curves, ib.—Cavalieri's method improved and extended by Torricelli, Roberval, &c., ib.—lastly appeared Newton and Leibnitz, who made their discoveries separately, 642—rejection of the higher powers of the differentials by Leibnitz liable to objection, ib.—the two problems into which the analysis, thus constituted, is divided, ib., 644—manner in which Newton proceeded, 642—the fluxionary and differential calculus two modifications of one general method, 643—the introduction of the analysis greatly enlarged the domain of the mathematical sciences, ib.—problems of maxima and minima to which it was extended, ib.—is peculiarly adapted to physical researches, 644—problem of integration, ib., 645—new analysis first published by Leibnitz, 646—writers by whom it was explained and improved, 647, 648—its firm establishment in Europe, 648—English mathematicians fell behind the French in the integrations of differential or fluxional equations, 649—opponents of the new method, ib.—contributions to the science by Cotes, Taylor, Bradley, Maclaurin, &c., 692, 714, 715—contributions of Italians to the higher calculus, 715—Euler's method of determining particular integrals, ib.—extension of the modern calculus by that of partial differences, ib.—application of it by Euler and D'Alembert, 716—calculus of variations, ib.—distinction between differentials and variations, ib.—integration of differential equations, ib.—modifications of the theory of infinitesimal calculus, ib.—the method of prime and ultimate ratios preferred by Newton, 717—improved by Robins and Landen, ib.—method of derivative functions, ib.—works on prime and ultimate ratios, 718, *n. l.* See Calculus, Fluxions, Newton, Descartes, &c.
- Geomys, genus of mammalia, XIV. 185.
- Geophilus, genus of myriapods, XV. 750—of birds, XVI. 794.
- GEORGE I., X. 563—his reign, V. 452—death, 457—navy, XVI. 93.
- II., X. 563—his conduct at the battle of Oudenarde, V. 451—his reign, 457—death, 464—Sir R. Walpole's excise-scheme, in the reign of, 457; XXI. 692—his gift to the British Museum, XIII. 389—navy, XVI. 93.
- III., X. 563—his reign, V. 464—first illness, 469—opposition to Mr Fox's India bill, 510—attempted assassination by Margaret Nicholson, 521—illness in 1788, 530—recovery in 1789, 533—insulted by the mob in 1795, 557—his anti-catholic feelings, and opposition to Lord Howick's bill, 600—illness in 1810, 611—Duke of York vested with the custody of his person, 623—his death, 624—character, 626; XVII. 736—corn acts of 1773, 1791, 1804, 1814, VII. 380,

GEO—GER

- 381—subsequent history of the corn laws in his reign, 382—act regarding the coinage, 76—remodelling of the mint, 80—navy, XVI. 94—prosecutions of the press under, 185—state of the navy in his reign, XX. 133—equestrian statue of, at Windsor, XXI. 838.
- GEORGE IV., X. 563—his establishment as Prince of Wales, V. 507—his pecuniary embarrassment in 1787, 522—discussions on his right to the regency, 531; XVII. 736—his debts, V. 556—appointed regent, 611—accession to the throne, 624—history of his reign, 626—conduct of his consort, 612; his hatred of her, 628—his dislike to the Catholic question, 654—his death and character, 657—corn laws in his reign, VII. 382—his visit to Ireland, XII. 501; to Edinburgh, VIII. 393—his gift to the nation of the library of George III., XIII. 390—navy in the reign of, XX. 133.
- (KNIGHTS OF ST.), X. 563; XI. 340.
- LAKE, in state of New York, X. 564; XVI. 214.
- (ST.), island, X. 563; IV. 668.
- (ST.), of Cappadocia, X. 563; XIII. 117.
- (ST.), cross of, X. 563.
- (ST.), religious orders of, X. 564.
- (ST.), one of the Azores, IV. 336.
- (ST.), or Madras, XIII. 802.
- the Olympian, XI. 23.
- George's (St), Chapel, Windsor, XXI. 881.
- (St), Hall, Liverpool, XIII. 521.
- (St), Sound, IV. 299.
- Georget (M.), his experiments on animal magnetism, XX. 427.
- GEORGETOWN, in British Guiana, X. 564; XI. 83—in Columbia, X. 564—in South Carolina, ib.—in Grenada, XI. 58.
- GEORGIA, North American state, X. 564; XXI. 419—newspapers of, XVI. 195—rate of interest in, XII. 432—colonization of, XXI. 433—debt of, 428—its opposition to the union, 441—wines of, 888.
- in Asia, X. 566; VI. 341, 342—alphabet of, II. 615—language, XIII. 215, 216—conquered by Alp Arslan, II. 604—people of, IX. 346—annexed to Russia, XIX. 485.
- GULF OF, X. 569.
- Georgian islands, XVIII. 280.
- versions of the Bible, IV. 701.
- GEORGIC, in poetry, X. 569—Virgil's Georgics, XXI. 595.
- GEORGIUM SIDUS, X. 569; III. 807. See Uranus.
- Georychus, genus of mammalia, XIV. 183.
- Geoteuthis, fossil cuttle-fish, XVII. 114.
- Geotrupes, genus of insects, IX. 121.
- GERA, city of Reuss, X. 569.
- GERACE, town in Naples, X. 569.
- Geraniaceæ, nat. order of plants, V. 187.
- GERANIUM, genus of plants, X. 569; V. 187; XI. 758.
- GERARD (Alexander), X. 569—on beauty, IV. 538, 540.
- (Dr), traveller among the Himalayas, XI. 447, 450.
- (FRANÇOIS), X. 570.
- (Marshal), his expedition against Antwerp, X. 208; IX. 826—president of the council, X. 210.
- GERARDE (John), herbalist, X. 570.
- Gerardus Niger, IX. 523.
- Gerber (Francis), his work on anatomy, II. 770.
- Gerbert, his alleged introduction of the Arabic notation into Europe, I. 556; III. 581.
- Gerbillon's geographical discoveries in Asia, III. 754.
- Gerbillus, genus of mammalia, XIV. 182.
- Gerdesius on rare books, IV. 709.
- GEREZ (Serra de), mountain chain, X. 570.
- GERGAL, Spanish town, X. 570.
- Gergonne, his investigation of a problem of Apollonius, III. 302.
- Gerhard (B.), his work on insects, IX. 23.
- (Paul), poetry of, XVIII. 118.
- his definitions of theology, XXI. 181—on theology, 185 *et seq.*

GER—GER

- Gerizim, XVII. 183—temple of, IV. 695.
- Germ. See Germs.
- Germa, in Fezzan, IX. 530.
- GERMAIN-EN-LAYE (St), X. 570.
- Germaine (Lord George), V. 498.
- GERMAN, in genealogy, X. 570.
- empire, VIII. 653.
- language, IX. 392, 393; XIII. 210—its value in philosophical nomenclature, I. 311—academy for its improvement, II. 70—improved by Adelung, 138—German Bibles, IV. 701—Low and High German, X. 587.
- Ocean, XVI. 298.
- philosophy contrasted with that of France, I. 186, 187—the impropriety of certain German philosophical terms, 219, 220—ethical systems, 428. See Kant, &c.
- (SAN), in Porto Rico, X. 570.
- SILVER, X. 570.
- stove, XX. 739.
- theologians, their opinions of Jesus Christ, XII. 762.
- Germanic Union, XII. 363.
- GERMANICUS (Cæsar), X. 570, 575; II. 423; XIX. 334.
- Germans (ancient), VI. 220; X. 572—origin of chivalry among, VI. 602—their appreciation of the female sex, 606—Roman wars with the, VII. 304; XIX. 319, 334, 333 *et seq.*—slavery among, XX. 320.
- (modern), X. 587—their intellectual character, IV. 212—character of the Austrians, 318—their notions respecting the personality of Homer, XI. 596, 597—their title of Graaf, VII. 466—defensive systems of fortification, IX. 835.
- (ST), in Cornwall, X. 571.
- GERMANTOWN, in Philadelphia, X. 571; XVII. 508.
- GERMANY, X. 572; IX. 400—history of, X. 572—Anabaptists in, II. 742—swarms of ants, III. 265—agriculture, II. 253—pointed architecture, III. 447, 448—influence of the Italian school of architecture, 453—army of the Germanic confederation, 652—Germanic league, V. 517—bookselling in, 31—concubinage in, VII. 229—copyright, 259—cotton manufacture, 460—its state in the time of the Crusades, 529—drama, VIII. 167—shipping employed in trade with England, 741—early engraving in, 800—empire of, 653—classical learning, IX. 326—fairs, 468—French invasions of, X. 101, 161—French trade with, 259—glass-making in, 664—persecution of the Jews in, XII. 778, 782—libraries, XIII. 417—medical jurisprudence, XIV. 422, 423—miocene rocks of, XV. 214—lead mines, 242—money, 436; XVI. 389—monarchy, XV. 413—mysticism, 756—results of education in, 818—insurance offices in, XII. 413—study of metaphysics, XIV. 610—literature, X. 693; XI. 348—newspapers of, XVI. 200; statistics of, for 1849, 201—historical writers of, XI. 549—birds, XVI. 730—school of painting, XVII. 74, 76—paper-making, 261—revival of classical learning in, 522—scholarship in, 524—new phase of philology in, ib.—its philology compared with that of England, 525—heights of mountains in, 643—poetry of, XVIII. 118—pottery, 433—Presbyterianism in, 485—the Reformation in, 821 *et seq.*—civil war of 1525, ib.—railway statistics, 787—romance, XIX. 264, 290—Roman invasion of, 333—school of sculpture in, 865—roads, 229—magnetic somnambulism, XX. 442—wars of Gustavus Adolphus in, 849—masonry, 711—beet-root sugar, 798— theologians, XXI. 183—weights and measures, 811—wool imported from, 907—wines of, 885—maps of, X. Plates. See German, Germans.
- Germar (E. F.), his work on insects, IX. 15.
- GERMEN, in botany, X. 594.

GER—GIA

- GERMINATION, X. 594; V. 162; XI. 693—changes that take place during, II. 382; V. 165; VI. 518, 519.
- Germs, production and discharge of, XVII. 682—fecundation of, 683.
- Geron, genus of insects, IX. 233.
- GERONA, Spanish city, X. 594.
- GERONTES, X. 594.
- Gerres, genus of fishes, XII. 288.
- GERRHA, Arabian city, X. 595.
- Gerris, genus of insects, IX. 164.
- GEES, in France, X. 595.
- Gersdorffite, mineral, XV. 116.
- GERSON (Jean Charlier de), X. 595—doctrines of, I. 326—his claims to the authorship of the Imitation of Christ, XIII. 61.
- Gersten (Prof.), on dew, VII. 768.
- GERUND, in Latin Grammar, X. 596.
- GERUSIA, Spartan Assembly, X. 596, 594; XX. 502.
- GERVAISE of Tilbury, historian, X. 596.
- Gervillia, genus of mollusks, XV. 348—fossil, XVII. 106.
- Geryoniidae, zoophytes, XXI. 1000.
- GESENIUS (E. H. Wilhelm), X. 596—his Thesaurus, XVII. 526—on the language of Scripture, XIX. 834.
- GESNER (Conrad), naturalist, X. 596; XIV. 461—on animals, 124—on entomology, IX. 2—on ornithology, XVI. 725.
- Gesneraceæ, nat. order of plants, V. 200.
- Gessler (Hermann), XX. 884; XXI. 146.
- GESSNER (Solomon), painter and poet, X. 598—his poetry, XVIII. 119.
- Gestation, period of, IV. 492, *n. l.*—in the lower animals, III. 182.
- Gesture, III. 40—language of, VII. 677.
- Geta, XIX. 346.
- GETE, X. 598; VII. 615.
- GETHEMANE, X. 598.
- GEX, French town, X. 598.
- GEYSER, X. 598; XII. 201, 202—simple mode of imitating the phenomena of, XVII. 602.
- Gez, IX. 173.
- GHADAMES, X. 598, 365.
- Ghâgrâ, river in Oude, XVII. 15.
- Ghaleb, a sheriff of Mecca, III. 350, 364.
- GHARA, in Hindustan, X. 598; XX. 843.
- Gharian, in Tripoli, XXI. 352, 353.
- GHAUTS, X. 598; XI. 449 *et seq.*; XVII. 598—height of, 644.
- WESTERN, X. 599.
- Ghawâzee, Egyptian dancing girls, VIII. 448.
- GHAZEPORE, town in Hindustan, X. 599.
- Ghebers, or fire-worshippers, VI. 341. See Guebres.
- Ghenghis Khan. See Genghis.
- GHEE, kind of butter, X. 600.
- GHEEL, town of Belgium, X. 600.
- Ghench. See Kench.
- GHEENT, X. 600—university of, IV. 620; XXI. 492—schools at, IV. 621—library of, 623—pacification of, XI. 569.
- Ghergong, in Assam, III. 763.
- GHERIAH, fortress in Hindustan, X. 602.
- Ghetaldus (Marinus), geometer, X. 504.
- Ghibelin faction, X. 602. See Guelphs.
- GIBERTI (Lorenzo), sculptor, X. 602; XVII. 61; XIX. 860.
- GILAN, Persian province, X. 602.
- GHIRLANDAIO, X. 603. See Corradi.
- GHIZNI, in Afghanistan, X. 603; II. 208—empire of, III. 744; XI. 478.
- Gholab Singh, VI. 309.
- GHOOR, or Ghour, in Afghanistan, X. 603.
- Ghoorahs, Ghoorkhas, or Gorkhas, X. 717; XVI. 144, 147, 148—their aid to the British in the Sepoy insurrection of 1857, 314.
- GHOST, X. 603. See Apparitions.
- Ghost-moth, IX. 211.
- Ghuzni. See Ghizni.
- Ghuzz, Memlook tribe, VIII. 487.
- GIANNONE (Pietro), X. 603.
- GIANT, X. 604—battle of giants, XX. 885.—mountains, XIX. 171.
- GIANT'S CAUSEWAY, X. 605; III. 284; XII. 504—rock composing the, XV. 133, *n. l.*, 190.
- GIAOUR, X. 606.

GIA—GIL

- GIARENO, town of Italy, X. 606.
 Gibb and Dean (Messrs), their steam-engine for draining the Haarlem Meer, XI. 173.
 GIBBET, X. 606.
 GIBBON (Edward), X. 606; XX. 840—his estimate of the talents of Crousaz, and account of his own studies in 1755, I. 106, n. 4—tendency to indecency in his writings, 154—on the works of St Ambrose, II. 664—converted to Popery by Bossuet's writings, V. 60—on the secondary causes of the propagation of Christianity, VI. 635; Lord Hailes' answer to, VII. 635, 636—his account of Daphne, 654—his merits as a historian, XI. 548—his library, XIII. 424—his house at Lausanne, 250—character of W. Law by, 296—on the destruction of the Alexandrian library, 381, n. 8—on Mohammedanism, XV. 300 *et seq.*—on Simeon Stylites, 407—on Giannone's history, X. 604—his notice of Neckar, XVI. 127—his History of the Decline and Fall of the Roman Empire, XI. 540—his enthusiasm for history, XII. 2—on Ossian, XVII. 5—on the state of the Jews under Antoninus Pius, 195—on monopolists, 318—Dr Robertson's correspondence with, XIX. 232—Whitaker's Review of his Roman History, XXI. 851.
 GIBBONS (Grinling), wood-carver, X. 617.—or long-armed apes, XIV. 139.
 GIBBOUS, X. 618.
 Gibbs (James), his style of architecture, III. 455.
 GIBEON, in Palestine, X. 618.
 Giblites, XX. 904.
 GIBRALEON, Spanish town, X. 618.
 GIBRALTAR X. 618—taken by the British in 1704, V. 448—siege of, by the French and Spaniards, in 1705, XIII. 302—siege of, in 1780, III. 518; V. 493, 501; VIII. 638—weights and measures, XXI. 811—expenditure upon, VII. 147.
 —(BAY OF), X. 620.
 —(STRAITS OF), X. 620—currents in, IX. 409; XIV. 470; XVII. 573.
 GIBSON (Edmund, D.D.), X. 620.
 —(Milner), his resolution regarding the newspaper stamp-duty, XVI. 190.
 Gibson's clod-crusher, II. 273.
 GIDEON, son of Joash, X. 621.
 GIEN, town of France, X. 621.
 Giescké on aurora borealis, IV. 249.
 GIESSEN, German city, X. 621—university of, XXI. 492.
 GIFFORD (William), X. 621—his censure of Drummond of Hawthornden, VIII. 191—his edition of Massinger's works, XIV. 345—his translation of Persius compared with Drummond's, VIII. 194—Juvenal translated by, XIII. 30.
 GIFT, in English law, X. 622—New Year's, *ib.*
 Gig-horse, XI. 660.
 Gigantolite, mineral, XV. 89.
 Gigg, or Jig, X. 622.
 GIGLIO, island, X. 622.
 GIGUELA, Spanish river, X. 622.
 GIJON, Spanish town, X. 622; IV. 156.
 Gilán, Persian province, XVII. 421, 423—silk produced in, 424.
 GIL (San), or St Giles, town of New Granada, X. 622.
 —(VICENTE), Portuguese dramatist, X. 622.
 GILA, river in New Mexico, X. 623; XIV. 729.
 —genus of fishes, XII. 257.
 Gilbert (Davies), on the pendulum, XXI. 800.
 —(Sir HUMPHREY), X. 624; XVI. 172—his discourse on the north-west passage, XVIII. 164.
 —on induction in moral philosophy, XV. 538.
 —(Messrs), their dipping-needle, XIV. 82.
 —(Dr WILLIAM), X. 623—the founder of the science of electricity, VIII. 523; I. 660—on magnetism, 570, 741; XIV. 3, 63; XX. 415.

GIL—GIR

- GILBERTINES, religious order, X. 624.
 Gilbertus Anglicanus, XX. 816.
 Gilboa, XVII. 183.
 Gilchrist (Alexander), his Life of Etty, IX. 363.
 GILD, or Guild, X. 624. See Guild.
 GILDAS, British historian, X. 624.
 Gilder and Carver, V. 755.
 GILDING, X. 624; V. 755—of porcelain, XVIII. 444—by electricity, XXI. 637.
 GILEAD, X. 627; XVII. 181—balm of, IV. 400.
 GILENA, Spanish town, X. 627.
 Giles (St), in Edinburgh, VIII. 398.
 Gilgal, III. 439.
 GILGIT, in Central Asia, X. 627.
 GILL (John), X. 627—on divinity, XXI. 196.
 —a measure, X. 627; XXI. 805, 808.
 —apparatus in spinning, XX. 511.
 —(Lough), XX. 329.
 Gillespie's Hospital, in Edinburgh, VIII. 402.
 Gillet's chaff-cutter, II. 284.
 GILLIES (John), historian, X. 627—on the Argonauts, III. 524.
 Gilliesiaceæ, nat. order of plants, V. 213.
 Gills, of fishes, II. 772; XII. 214—temporary, of tadpoles, III. 113—of mollusks, XV. 344.
 GILOLO, one of the Spice islands, X. 627.
 GILPIN (Bernard), divine, X. 628.
 Gilse. See Grilse.
 Gilsland Spa, VII. 578—waters of, XV. 37.
 Gilt-head, fish, XII. 286.
 GIMBALS, X. 629.
 Gimmerthal (B. G.), his works on insects, IX. 23.
 GIN, X. 629, 449; IX. 760—manufacture of, VIII. 51; in Holland, XI. 583—juniper berries used for flavouring, XIII. 19.—in mechanics, X. 629.
 Ginckel (General), his Irish campaign, V. 443; XII. 490; XXI. 840, 841.
 GINETA (La), Spanish town, X. 629.
 GINGEE, in the Carnatic, X. 629.
 Gingely oil, XVI. 495; XIII. 169.
 GINGER, X. 629; V. 211—adulterations of ground ginger, IX. 769.
 —order of plants, V. 211.
 GINGERAH, X. 629.
 Gingham, places where manufactured, VII. 449.
 Ginglymostoma, genus of fishes, XII. 323.
 GINGUENÉ (Pierre Louis), X. 629—on Machiavelli, XIII. 778, 779, 781.
 Ginkgo tree, XVII. 765.
 GINSENG, X. 630; V. 195; III. 394; VI. 585.
 GINZO DE LEMIA (Santa Marina), Spanish town, X. 630.
 Giobertite, mineral, XV. 92.
 GIOJA (Flavio), X. 630, 470; II. 647; XIV. 2; XVI. 3; XX. 240.
 Giordani, his work on insects, IX. 22.
 GIORDANO (Luca), painter, X. 630; XVII. 73.
 GIORGIONE, or Giorgio Barbarelli, X. 630; III. 710; XVII. 70; XXI. 290.
 Giorno (S.), his work on insects, IX. 8.
 GIORNOVICH (Giovanni Maria), musician, X. 631.
 GIOTTO, X. 631; XVII. 61, 70.
 Giovanni de Bologna, sculptor, XIX. 863.
 GIOVENAZZO, town of Naples, X. 631.
 Giovio (Paolo). See Jovius (Paulus).
 GIPPS (Sir George), governor of New South Wales, IV. 273.
 GIPSIES, X. 631. See Gypsies.
 GIRAFFE, X. 631; XIV. 209, 204; II. 217; XVII. 632—dentition of, XVI. 466—fossil, XVII. 638—erectile arrangement in its tongue, III. 100. See Camelopard.
 GIRALDI (Lillo Gregorio), X. 631.
 GIRALDUS CAMBRENSIS, X. 631; IV. 475.
 Girard (Albert), X. 504—his discoveries in algebra, I. 559, 708; II. 485—his character, I. 708—on hydrodynamics, XII. 73, 140, 146—his restoration of the lost books of Euclid, XVIII. 360.
 —College, Philadelphia, XVII. 509.

GIR—GLA

- Girard's lamp, XIII. 171.
 GIRDER, X. 631; V. 749; VII. 328; XII. 586—trussed girders, 599—bowstring girders, 602—tubular girders, 606—building up a girder, VI. 261—girder rails, XVIII. 758—strength of, XX. 197, 781.
 GIRDLE, X. 631.
 —of Hope, order of, XIII. 121.
 GIRGEH in Upper Egypt, X. 631; VIII. 505.
 GIRGENTI, in Sicily, X. 632; II. 421; XX. 245, 255.
 GIRONDE, in France, X. 632.
 GIRONDISTA, X. 632, 71 *et seq.*—their destruction, 83.
 GIBONS (St), in France, X. 632.
 GIRVAN, in Ayrshire, X. 632.
 Gisco, VI. 290, 291.
 Gismondine, mineral, XV. 77.
 GISORS, town in France, X. 632.
 Gisquet, Parisian police under, XVIII. 188, 189.
 Gistl (J.), his work on insects, IX. 21.
 Gitona, genus of insects, IX. 257.
 GITTITH, X. 632.
 GIUGLIANO, town in Naples, X. 633.
 GIULIANO (San), town in Sicily, X. 633.
 GIULIO ROMANO, painter, X. 633; XVII. 69.
 GIURGEVO, in Wallachia, X. 633.
 GIVET, town in France, X. 633.
 GIVORS, town in France, X. 633.
 Givry, qualities of the stone of, XX. 717, 718, 759.
 Gizeh, or El-geezeh, VIII. 499—pyramids of, III. 436; VIII. 500.
 Gizzard of birds, III. 109—of insects, IX. 51.
 Glacial deposits, XV. 215.
 GLACIER, X. 633—origin of, VI. 780—of the Alps, II. 625—of Norway, XVI. 320, 625—not found among the Andes, III. 130—of the Pyrenees, XVIII. 700—influence of, on rocks, XV. 139—in Britain, during the pleistocene period, 215—icebergs formed by, XII. 196—abrading and transporting power of, XVII. 603. See Moraines.
 Glaciers, their action as geological agents first understood by Playfair, I. 803, n.—number in Switzerland, XX. 888—Count Rumford on a curious phenomenon in those of Chamouni, XXI. 231.
 GLACIS, in fortification, X. 640; IX. 819.
 GLADBACH, in Rhenish Prussia, X. 640.
 GLADIATORS, X. 640; II. 730—insurrection of Roman, XIX. 322—statue of the Dying Gladiator, VIII. Plate.
 GLADOVA, or Kladova, in Servia, X. 641; VII. 653.
 Gladstone (W. E.), as a philologist, XVII. 525.
 Glaisher (Mr), on terrestrial radiation, XIV. 645—his hygrometrical tables, 653—on snow-crystals, 659—annual temperature, 672—his thermometers, XXI. 221.
 Glammis castle, XIII. 2—Glammis sandstone, XX. 711.
 GLAMORGANSHIRE, X. 641—population and value of property, VIII. 754.
 GLAMOUR, X. 642.
 GLANCE-COAL, X. 642; XV. 123.
 GLAND, X. 642; IX. 758—structure and classification of glands, II. 832—lymphatic, 805—mucous, 836—lacrymal, III. 45—salivary, 49—pineal, 54—Peyerian, 61—prostate, 70—Cowper's, *ib.*—mammary, 72—poison-glands of serpents, 113; XIX. 44—blood-glands, XVII. 660—of plants, V. 75.
 Glanders, disease in horses, XXI. 573.
 GLANDFORD BRIGG, town in Lincoln, X. 642.
 Glandina, fossil mollusks, XVII. 111.
 Glandular cells, XVII. 650.
 Glanibanta, Roman station, VIII. 267.
 GLANVILL (Joseph), X. 642—his *Scepsis Scientifica*, I. 42, n. 3—his illustrations of Descartes' doctrine, 63.
 Glanville (Ranulph), his work *De Legibus &c. Angliæ*, XX. 314.

GLA—GLE

- Glaphyra, VI. 223.
 Glareola, genus of birds, XVI. 808.
 GLARUS, or Glaris, in Switzerland, X. 643; XX. 882—fossil fishes in schists of, XII. 354, 355; XVII. 640—schists of, belonging to the eocene tertiary period, 128.
 Glaserite, mineral, XV. 99.
 GLASGOW, X. 645—alum works near, II. 637, 640—quantity of vapour in the air at, IV. 183—canal to Johnstone, 333—and Ayr Railway, *ib.*—Glasgow, Dumfries, and Carlisle Railway, *ib.*—cotton manufactures, VII. 446, 449 *et seq.*—cotton-mills, 451—turkey-red dye-works, VIII. 292—iron manufactures of, XII. 539—population of, XIII. 176; XIX. 800—embroidery of muslins in, XIV. 285—projected supply of water from Loch Katrine for, XII. 141—Dr Chalmers' labours in, VI. 404—university library, XIII. 403—mortality, XV. 613—stone wharves at, XVI. 79—post-office statistics, XVIII. 416—societies in, XX. 368—rule for estimating horsepower in steam-engines, 602—university, XXI. 476. See Clyde.
 GLASLYN, in North Wales, X. 657.
 Glasnevin, VIII. 214.
 GLASS, X. 657—achromatic glasses, II. 86—anaclastic, 743—its vast utility to science, III. 198—annealing of, 218—burning-glasses, VI. 1; XI. 275—alleged discovery of the manner of making it, IV. 643—trade of Birmingham, 732—use of brass in colouring, V. 277—cement for broken, VI. 368—etching on, VIII. 813—specific gravity of, XII. 88—its utility and beauty, XIV. 273—musical glasses, XI. 230—use of gold, in staining, X. 702—transmission of heat through, I. 954—ancient allusions to, XVI. 521—colours of decomposed, 600—films of decomposed glass, 603—polarising structure in heated, I. 912—irregular dilatation of, 958—manufactured by the Phœnicians, XX. 906—glass trade of Sunderland, 808. See Barometer, Glazing, Lens, Mirror.
 —houses, XI. 755, 756.
 —(Mr), his opinions concerning the primitive church, XII. 371 and *n.*
 Glass-blowers, diseases of, XIV. 443.
 Glass-manufactures of England, VIII. 732—Ireland, XII. 521—France, X. 256—of Bohemia, IV. 310, 314—at Birmingham, 732—of Newcastle, XVI. 167—Prussia, XVIII. 669—glass-blower's bellows, IV. 792—water-pressure blow-pipe, *ib.*—glass-cutting, X. 673, 674—early practised at Sidon, XX. 269. See Glass.
 GLASSITES, religious sect, X. 675—places of worship in Scotland, XIX. 801.
 GLASTONBURY, in Somersetshire, X. 675—foreign cloth-makers settled at, XXI. 915.
 GLATZ, Prussian city, X. 675.
 GLAUBER (John Rodolph), X. 675.
 Glauber-salt, XV. 97; X. 675.
 Glauberite, XV. 96; XVI. 658.
 GLAUCHAU, town of Saxony, X. 676.
 Glaucolite, mineral, XV. 71.
 GLAUCOMA, X. 676.
 Glaucomya, genus of mollusks, XV. 350.
 Glaucophane, mineral, XV. 86.
 Glaucopis, genus of insects, IX. 210—of birds, XVI. 768.
 Glaucosoma, genus of fishes, XII. 276.
 GLAUCUS, X. 676—genus of mollusks, XV. 370.
 Glaukodote, mineral, XV. 115.
 Glazier, V. 756—glazier's vice, X. 670—diamond, 671; VIII. 5—his work, in a building, V. 756.
 GLAZING of earthenware, X. 676; XVIII. 442—of windows, X. 669—of gunpowder, XI. 155—of cloth, by calendering, VI. 91.
 GLEBE, X. 676.
 Gleditch on shoals of ants in Germany, III. 265.
 Gleditschia, genus of trees, XVII. 763.

GLE—GLU

GLEE, in music, X. 676.
 Gleet, nasal, in animals, XXI. 571.
 GLEIG (George), Bishop of Brechin, X. 676—on Prof. Robison, XIX. 240.
 GLEIM (J. W. Ludwig), German poet, X. 677.
 GLEIWITZ, Prussian town, X. 677.
 GLENCOE, X. 677—massacre of, V. 443, 444; XXI. 7.
 Glencorse reservoir, III. 338.
 GLENDALAGH, or Glendalough, X. 677; XXI. 858, 859.
 GLENDOWER (Owen), X. 677; VIII. 687.
 Glenelg (Lord). See Grant (Charles).
 Glengall (Lord), his evidence on salmon fishing, IX. 619.
 Glengariff sandstones, XV. 200.
 Glengarry, XII. 438.
 Glenmore, XII. 438; XIX. 794.
 Glenie (Mr), on gunnery, XI. 121.
 Glenney (Mr), his description of florists' flowers, XI. 751, 752, 753.
 Glentromites, fossil echinoderms, XVII. 98.
 Glenroy, XII. 488.
 Glentilt, IV. 175; XVII. 457.
 GLIN, town in Limerick, X. 677.
 Glires, order of mammalia, XIV. 177, 135.
 Glisorex, teeth of, XVI. 451.
 GLISSON (Francis), physician, X. 677—his anatomical researches, II. 762—on the nerves, 814.
 GLOBE, X. 678. See Earth.
 Globe-animal, III. 199.
 Globe-fishes. See Diodontidae.
 Globes, artificial, X. 678—terrestrial, 485—celestial, ib.—description and use of, in geography, ib.—solution of problems by, 486, 487—for the use of the blind, IV. 777.
 — sections of, their use in masonry, XX. 728.
 Globicephalus, genus of mammalia, XIV. 225.
 Globigerina, fossils, XVII. 93.
 Globulariaceae, nat. order of plants, V. 202.
 Globules, of the blood, II. 779—quantity increased by the use of preparations of iron, XV. 39, n.—of the ganglia, II. 811.
 Globulina, II. 780.
 Globulodus, genus of fossil fishes, XII. 337.
 GLOGAU, Prussian city, X. 678.
 Gloma, genus of insects, IX. 235.
 Glomach waterfall, XIX. 426.
 Glomeris, genus of myriapods, XV. 748.
 GLOMMON, Norwegian river, X. 678; XVI. 321.
 Glories, or halos, colours of, VI. 648.
 Glory of God, XXI. 192.
 GLOSS, X. 678.
 GLOSSARY, X. 678—of architectural terms, III. 507.
 GLOSSOP, in Derbyshire, X. 678.
 Glossophaga, genus of mammalia, XIV. 149.
 Glottalite, mineral, XV. 77.
 Glottis, in man, III. 50, 51; XVII. 679—in animals, III. 101.
 Glottidium, in mollusks, XV. 355.
 GLOUCESTER, X. 678—siege of, in 1643, V. 403.
 — in Massachusetts, U. S., XIV. 341.
 — Robert of, his rhyming Chronicle, XVIII. 120.
 GLOUCESTERSHIRE, X. 679—cheese, VII. 625—population and value of property, VIII. 754—large oak in, XXI. 274.
 GLOVE, X. 682—glove trade of England, VIII. 731—of France, X. 256—in the time of Shakspeare, XX. 76—exports of, XIII. 311.
 GLOVER (Richard), X. 682—his poetry, XVIII. 124.
 Glow-worm, X. 683; IX. 107; XIII. 458.
 GLUCHOW, Russian town, X. 683.
 Glucina, VI. 488; XV. 65.
 Glucinum, VI. 488.
 GLUCK (Christopher Willibald von), X. 683—his imitative music, XV. 737.
 GLÜCKSTADT, town of Denmark, X. 683.
 GLUE, X. 684—Indian—Jeffery's marine, ib.; XX. 190—liquid, X. 684—obtained from skins, II. 834—its use in joinery, V. 753; XII. 811.

GLU—GOB

Glumellæ, in botany, V. 125.
 Glumes of grasses, V. 125.
 Glumiferae, sub-class of plants, V. 215.
 Glutæus, a muscle, III. 92.
 Glutin, II. 381.
 GLUTEN (vegetable), X. 684; VIII. 19; IX. 657—in bread, IV. 379.
 Glutinous hag, fish, XII. 227.
 Gluts, in the market, XVIII. 259.
 GLUTTON, X. 684; XIV. 156—in Norway, XVI. 324—Lapland, XIII. 235.
 GLYCAS (Michael), historian, X. 684.
 Glycera, genus of annelides, XI. 299, 291.
 GLYCERINE, X. 684; VI. 510; II. 381; XVI. 492.
 Glycimeris, genus of mollusks, XV. 350—fossil, XVII. 108.
 Glycocine, VI. 512.
 Glyphea, fossil lobsters, XVII. 102.
 Glyphis, genus of fossil fishes, XII. 341.
 Glyphisodon, genus of fishes, XII. 265.
 GLYPTICS, X. 685; VIII. 813.
 Glypticus, fossil echinoidæ, XVII. 100.
 Glyptocephalus, genus of fossil fishes, XII. 338.
 Glyptocrinus, fossil echinoderms, XVII. 98.
 Glyptodon, XVII. 174, 639—teeth of, XVI. 441.
 Glyptolepis, genus of fossil fishes, XII. 336; XVII. 123.
 Glyptosteus, genus of fossil fishes, XII. 336.
 GMELIN (Johann Friedrich), naturalist, X. 685—his edition of the Systema Naturæ, III. 183; IX. 4; portion on ornithology, XVI. 729,
 — (JOHANN GEORG), X. 686.
 — (SAMUEL GOTTLIEB), X. 686.
 — (Eberhard), advocate of animal magnetism, XX. 442.
 Gmelinite, mineral, XV. 76.
 GMUND, town in Würtemberg, X. 686.
 GMÜNDEN, in Upper Austria, X. 686.
 Gnat, IX. 224.
 Gnathium, genus of insects, IX. 136.
 Gnathodon, genus of mollusks, XV. 350.
 Gnathia. See Egnatia.
 Gnawers, in zoology, XIV. 177. See Rodentia.
 Gneiss, XV. 154—soils from, II. 390—its distribution in Scotland, XIX. 792—in Sutherland, XX. 841.
 GNESEN, Prussian town, X. 686.
 Gnetaceae, nat. order of plants, V. 210.
 Gnoma, genus of insects, IX. 145.
 GNOME, X. 686.
 GNOMON, X. 686, 464; VII. 772, 777.
 Gnomonics, VII. 772.
 Gnoriste, genus of insects, IX. 228.
 GNOSSES, in Crete, X. 686; VII. 41.
 Gnostics, I. 507—meaning of the name, ib. n.—their opinions of a hierarchy of angels, III. 311. See Gnosticism.
 GNOSTICISM, X. 686; IX. 421; XVII. 232.
 GNU, X. 689; XIV. 211.
 GOA, X. 689—arrack of, III. 675—library at, XIII. 431—weights and measures, XXI. 811.
 Goagnazes, V. 279, 280.
 GOALPARAH, town in Hindustan, X. 690.
 Goands, in Hindustan, XI. 95.
 GOAT, X. 690; XIV. 211; II. 354—of America, 713—milk of, XV. 11—flesh, IX. 762—of India, XI. 455—of Angora, III. 166—Cashmere, VI. 309; XI. 455; XXI. 906—Rocky Mountain, XIV. 211; XXI. 906—Palestine, XVII. 191—leather from the skins of, XIII. 305—number and distribution of, XVII. 632—Tibet, XXI. 247.
 — ISLAND, X. 690; VI. 135.
 Goatfell, VI. 27.
 Goatsuckers, birds, XVI. 758.
 GOBELIN tapestry, X. 690—manufactory of, VI. 271; X. 255; XXI. 20.
 Gober, province of Houssa, XI. 777.
 GOBI, in Central Asia, X. 690; III. 732; XV. 495; XVII. 614.
 Gobilidæ, or Gobioides, family of fishes, XII. 305, 306—fossil, 344.
 Gobius, genus of fishes, XII. 306—fossil, 344.

GOB—GOH

Gobies, fishes, XII. 305.
 Gobiesox, genus of fishes, XII. 305, 307.
 Goble (George), clairvoyant, XX. 438—his imposture detected, 439.
 Goch, in Rhenish Prussia, X. 690.
 Gobio, genus of fishes, XII. 257—fossil, 346.
 GOD, X. 690—Descartes' argument for the existence of, I. 59—Clarke and Newton's reasonings, 140 and n. 2, 141; VI. 757—our idea of, associated with those of infinite space, and endless duration, I. 141—impossibility of finding proper language to describe the nature and attributes of, 147—three different manifestations of, 486—glory of God, meaning of the phrase, 518—Scriptures explain what he is relatively to us, not what he is absolutely in himself, ib.—Epicurean doctrines respecting, III. 189, n.; IX. 273—views of the Athenians respecting, IV. 211, 216—of Plato, XVII. 803, 806, 810, 812, 813—blasphemy against, IV. 754—being and attributes of, XIV. 619; XV. 556, 557—his nature the basis of moral rectitude, 556—his revelations of himself the criterion of moral rectitude, 557—duty to, 570, 571—love to, 562—notion of, in Hegel's system, XI. 288—how represented in hieroglyphics, 380—Kant on the existence of, XIII. 49—Socrates on the evidence of his existence and attributes derived from final causes, XX. 403—doctrine concerning, XXI. 184—concept of, ib.—existence of, 185—names, 188—attributes, 189—unity, 192—works of, 195—reverence due to, ib. See Atheism, Theology, Trinity.
 Gods, pagan, I. 457—character of, 458, 459; XIV. 621—worship offered to, I. 459—were often deceased men, 513—river-gods, XIX. 180. See Mythology.
 GODALMING, in Surrey, X. 690; XX. 836.
 Godart, earl of Athlone, XI. 328, n. 3.
 — (J. B.), his works on insects, IX. 15.
 GODAVERY, Indian river, X. 690, 598, 599; XI. 450; XVII. 647; XVIII. 800.
 Godefroy. See Gothofred.
 Goderich (Lord), his brief administration, V. 649.
 — in Canada, VI. 138.
 GODFATHERS and GODMOTHERS, X. 690.
 GODFREY of Bouillon, X. 690—raised to the throne of Jerusalem, VII. 525; XII. 734; XVII. 196.
 — murder of, V. 427.
 GODMANCHESTER, in Huntingdon, X. 691.
 GODOLPHIN (Sydney), earl of Godolphin, X. 691; V. 445.
 Godoy (Don Manuel de), X. 149; XX. 472; XIII. 11.
 GODWIN (Earl), VIII. 662.
 — (FRANCIS), X. 691.
 — (MARY WOLLSTONECRAFT), X. 692.
 — (WILLIAM), X. 691—his novels, XIX. 278.
 Godwits, birds, XVI. 803.
 Goedart (John), his work on insects, IX. 3.
 GOES, or Ter-goes, town in Holland, X. 693.
 — (Pedro de), V. 280.
 GOETHE (John Wolfgang von), X. 693—his plays, VIII. 167—his claims to be the discoverer of the vertebral theory of the skull, XVI. 501, 502—his friendship with Lavater, XIII. 251, 252—poetry of, XVIII. 119—novels, XIX. 293.
 Goetz, missionary, III. 753.
 Goetze on entozoa, XXI. 974, 977, 978.
 Gog, X. 701—and Magog, ib.
 GOGGRAH, river in Hindustan, X. 701; XVII. 647.
 Gogo, seaport in Hindustan, X. 701.
 GOGUET (Antoine-Yves), X. 701—on the origin of writing, II. 606—on castes, VI. 314—on the advantages of coined money, XV. 418.
 Gohar, VIII. 477.
 GOHUD, town in Hindustan, X. 701.

GOH—GOM

GOITRE, X. 701—common on the delta of the Oronoco, XXI. 536—in Westmoreland, 842. See Cretins.
 GOIZUETA, Spanish town, X. 701.
 Gökumite, mineral, XV. 85.
 GOLCONDA, X. 701; VIII. 1—diamonds no longer found at, XI. 458.
 GOLD, X. 701; XV. 66, 113—sources from which chiefly obtained, 230—in chemistry, VI. 499—its ductility, 443, 482; VIII. 229; X. 702—assaying of, III. 772—carat, VI. 229—its value in the early part of last century, VII. 378—relative proportion of silver to, 78—amount coined at the royal mint, 95—recoinage in 1774, 79; in 1842, 81—routine of coinage at the mint, 84—supply of, in early ages, 77, 188—effect of its increase on productive industry, 188—decrease in the supply of, 191; made up by the gold discoveries of 1848 and 1851, ib.—specific gravity of, XII. 88—gold coins of Britain, XV. 438, 439; of different countries, 441, 442—debasement of, XIV. 428—its poisonous qualities, 434—distribution of, XV. 231; XVII. 621—preparation of, XV. 233—why more valuable than silver, XVIII. 241—how used in gilding porcelain, 444—printing in, 557—cohesion of, XX. 756—from Tasmania, XXI. 32. See Precious Metals, Gold-mines.
 — diggings in New South Wales, IV. 276, 277; in California, VI. 97; in New Zealand, XVI. 235.
 — COAST, X. 704; II. 227; XI. 88, 89.
 GOLD-BEATING, X. 702—shell gold—size—thread—wire, ib.
 Gold-fish, XII. 255.
 Gold-leaf, X. 702, 703, 625—in gold lace-making, XIII. 145.
 Gold-mines, XV. 230, 113—of America, II. 705; XV. 232—Assam, 764—Australia, IV. 275, 276, 277, 278; XV. 232—Bambouk, IV. 408—Bolivia, 824—Brazil, V. 283, 292, 298—Bogota, IV. 809—Burmah, V. 779—Bukhara, 758—California, VI. 97, 98; XV. 232—Chile, VI. 548, 550—Carolina, 246—Europe, IX. 387—Hindustan, XI. 457—Honduras, 613—Hungary, IV. 313; XII. 17—Ireland, 506—Japan, 689—Mexico, XIV. 715—Ural Mountains, XV. 231—United States, 232—Peru, XVII. 471—Russia, XIX. 542, 543—Sumatra, 804—Tibet, XXI. 247—Venezuela, 536—Virginia, 598. See Gold, Gold-diggings, Precious Metals.
 Gold-of-pleasure, plant, II. 335—oil of, XVI. 495.
 Gold-powder for bronzing, V. 677.
 GOLDAPP, in East Prussia, X. 704.
 GOLDAU, in Switzerland, X. 704.
 GOLDBERG, Prussian town, X. 704.
 GOLDEN FLEECE, X. 704; III. 524—order of the, X. 704; IX. 659; XIII. 116.
 — NUMBER, X. 704; VI. 81, 84.
 Goldfinch, XVI. 761.
 Goldfuss (F.), his work on insects, IX. 24.
 — (Prof.), on a fossil reptile, XVII. 133.
 GOLDONI (Carlo), X. 704—his comedies, VIII. 148.
 GOLDSMITH, X. 705.
 — (OLIVER), X. 705—his comedies, VIII. 166—his birthplace, XIII. 684—his poetry, XVIII. 124—Vicar of Wakefield, XIX. 275—his defective reading, XXI. 172.
 GOLEGA, town in Portugal, X. 709.
 Goletta, XXI. 365.
 GOLF, Scotch game, X. 709—golf-balls manufactured at St Andrews, III. 136.
 GOLGOTHA, X. 709.
 Goliathides, family of insects, IX. 127.
 Goliathus, genus of insects, IX. 127.
 GOLJUS (James), X. 709—a portion of the works of Apollonius recovered by, III. 301.
 GOLLNOW, Prussian town, X. 709.
 GOLNITZ, in Hungary, X. 709.
 Golownin, on Japan, XII. 688, 692 et seq.
 Gomarus (Dr), XI. 573.

GOM—GOO

- Gomarists, III. 617; XI. 573.
 GOMBROON, Persian seaport, X. 709; V. 764.
 Gomer, descendants of, VIII. 45; VI. 365.
 GOMERA, one of the Canaries, X. 710; VI. 167.
 Gomez (General), XX. 480.
 GOMOR, town in Hungary, X. 710.
 GOMORRAH, X. 710; III. 761; XVII. 187.
 Gompertz on the value of life contingencies, III. 223; XII. 401.
 Gomphocerus, genus of insects, IX. 160.
 Gomphosus, genus of fishes, XII. 267.
 Gomul river, II. 202.
 GONDAR, in Abyssinia, X. 710; II. 56—Bruce's residence at, V. 690.
 Gondl. See Retz (Cardinal de).
 GONDOLA, X. 710—use of, in Venice, XXI. 538.
 Gonds, XI. 466.
 GONG, X. 710; XV. 713, 709—Javanese, XII. 706.
 Gong-metal, VI. 497, 586.
 GONGORA Y ARGOTE (Luis de), X. 710—his poetry, XVIII. 115.
 Gonia, genus of insects, IX. 248.
 Goniatites, fossil mollusks, XVII. 112.
 Gonidia, in lichens, V. 146.
 Goniodontidae, family of fishes, XII. 263.
 Goniognathus, genus of fossil fishes, XII. 345.
 GONIOMETER, X. 710; XV. 50; I. 972.
 Goniometry, the name under which Euler's arithmetic of series is cultivated in Germany, I. 713.
 Goniopholis, fossil reptiles, XVII. 152.
 Gonium, genus of animalcules, III. 201.
 GÖNNERN (F. Von), mesmerist, XX. 438.
 GONGONG APEE, X. 710; IV. 409.
 Gonoplax angulata, VII. 541.
 Gonorrhynchidae, family of fishes, XII. 254.
 Gonorrhynchus, genus of fishes, XII. 255.
 Gonostoma, genus of fishes, XII. 247.
 Gonsalvo (Ludovico), his memoirs of Loyola, XII. 749.
 Gontran, X. 4.
 Gonzago, Brazilian poet, V. 298.
 Gonzalvo, voyage of, IV. 262.
 Good, XV. 557; XX. 398—the chief, or summum bonum, III. 560; XV. 573.
 —FRIDAY, X. 710; I. 502.
 —HOPE (CAPE OF), X. 711; II. 227—first doubled by Vasco da Gama, 393; XX. 124—observatory at, III. 818; IV. 90—ant-hills at, III. 263—insurance offices in, XII. 413—disturbances at, in 1825, V. 641—astronomical observations at, III. 118; V. 60; I. 862—discovery of, VII. 188; X. 393—taken by the British, 104—variation of the needle at, XIV. 52—height of waves off, XVII. 582—plants of, V. 222, 228, 229—heat of the sun at, XIV. 637; of the surface of the soil, 644—formation of clouds at, 655—fall of rain, 658—wines of, XXI. 887, 889—weights and measures, 810—wool from, 913.
 —(John Mason), on the origin of the name of Macaronic poetry, VIII. 249, n. 3—on the African rat, XVI. 449—his life of Dr Geddes, X. 445.
 Goodeniaceæ, nat. order of plants, V. 197.
 Goodfellow (B.), his steam-engine machinery, XX. 605, 606—his engines, 610—fine-boilers, 617.
 Goodlake (Thomas), on the greyhound, XI. 772.
 GOODWIN SANDS, X. 716; XIII. 65.
 —(Mr), Greco-Egyptian work on magic, edited by, VIII. 443, n. 1.
 —(Mr), his manufacture of sal-ammoniac, II. 721.
 —(Mr), on the diseases of the horse, XI. 664.
 Googe (Barnaby), his work on husbandry, II. 256.
 GOOLE, in Yorkshire, X. 716.
 GOOMSUR, town in Hindustan, X. 716.
 GOOMTRY, river of Hindustan, X. 716; XVII. 15.
 Goor, XX. 798, 796.
 GOORGAON, town in Hindustan, X. 716.

GOO—GOS

- Goosander, bird, XVI. 819.
 GOOSE, X. 716; XVI. 816—great numbers of geese in Mecklenburg, XIV. 419—its flesh, IX. 762—grease, XVI. 493—quills from, XVII. 399—goose-liver pies, XX. 747.
 Goose-skin, in anatomy, II. 834.
 GOOSEBERRY, X. 716; V. 194—culture of, XI. 718—fruit of, V. 138—as food, IX. 759.
 —order of plants, V. 194.
 Goosefoot order of plants, V. 203.
 Gopher wood, III. 608.
 GÖPPINGEN, in Württemberg, X. 716.
 GORCAH, X. 717. See Ghoorcah.
 GORCUM, town in Holland, X. 717.
 GORDIAN KNOT, X. 717; XIII. 767.
 GORDIANUS (M. A. Africanus), Roman emperor, X. 717; XIX. 348.
 —(M. ANTONIUS), Pius, Roman emperor, X. 717; XIX. 348.
 GORDIUM, in Asia Minor, X. 717; XIII. 767.
 Gordius, genus of annelides, XI. 302, 307.
 GORDON (Robert, Rev. Dr), X. 717.
 —(THOMAS), X. 717—his translation of Tacitus, XXI. 5.
 —(Adam), VI. 606.
 —(Col. Hon. A.), on artillery, III. 686.
 —(Dr John), his system of anatomy, II. 767—on the veins, 794—on the lymphatics, 804, 805—on lymphatic glands, 805—on the nerves, 806—on the skin, 834—his opposition to Spurzheim's views, XX. 519.
 —(Lord George), his riots, V. 491.
 —(Prof.), of Erfurt, on electricity, VIII. 526.
 —(Mr), on the Greek revolution, XI. 27, 29, 31.
 Gordon's Hospital, Aberdeen, II. 30.
 GORE, in heraldry, X. 717.
 —(G.), his experiments in voltaic electricity, XXI. 631.
 —(Mrs), her novels, XIX. 283.
 GOREE, island, X. 717—trade of, XX. 49—geology, 50.
 Gorey, in Wexford, XXI. 846, 847.
 Gorfous, birds, XVI. 811.
 GORGE, in architecture, X. 717.
 —in fortification, X. 717.
 GORGED, in heraldry, X. 717.
 GÜRGEI, dictator of Hungary, XII. 24, 25—his attack on Buda, XVII. 480.
 GORGET, X. 717.
 Gorgias of Leontini, IV. 205.
 Gorgonidae, polypes, XXI. 1004.
 GORGONS, in mythology, X. 717.
 Gorham case, XI. 351.
 Goring (Dr), on microscopes, XIV. 763 *et seq.*—his solar camera microscope, 791, 792—on the illumination of microscopic objects, 796, 799—on test-objects, 802.
 GORITZ, in Illyria, X. 718.
 GORLITZ, Prussian town, X. 718.
 Goro, XVII. 241.
 Gorresio (G.), his translation of the Ramayana, XVII. 529.
 Gorse, II. 329—suitable forage for milch cows, VII. 632; XIII. 86—covers of, XII. 37—as a hedge, XVII. 760—as a protection to young trees, XXI. 273.
 GORT, town in Galway, X. 718.
 GORTHO, modern name of Corinth, X. 718; VII. 367, 368.
 Gorton locomotive station, XVIII. 775.
 Gortschakoff (Prince), XIX. 500.
 GORTYNA, in Crete, X. 718—coins of, XVI. 373.
 GORUCKPORE, town in Hindustan, X. 718.
 Gory (L.), his works on insects, IX. 18.
 Goshawk, XI. 248.
 GOSHEN, in Egypt, X. 718; XVIII. 819.
 Goski (J. B.), his work on insects, IX. 23.
 GOSLAR, town in Hanover, X. 718.
 Goslarite, mineral, XV. 98.
 Gospatric, XIX. 747.
 GOSPEL, X. 718—introduction of, I. 480—though springing out of the Mosaic, is in itself a new religion, 481—points which distinguish it from the Mosaic dispensation, *ib.*—contrast between the

GOS—GOU

- two, *ib.*, 482—sacraments under, 482—worship, 481—its spirituality, *ib.*—universality, 484—unity, 486—supplies principles to regulate the conduct, but no precise code of laws, 484—admits all to an equality of privileges, 486, 489—chief causes of opposition to, 506. See Bible, Apocrypha.
 GOSPORT, in Hampshire, X. 718; XVIII. 379—aurora borealis seen at, IV. 243.
 GOSSAMER, X. 718.
 Gossan, mineral, XV. 222.
 Gosse (P. H.), his opinions regarding fossils, XVII. 124—his arrangement of the actinoids, XXI. 1004, n. 2.
 Gosselin (M.), on the Periplus of Hanno, II. 219; X. 461—on a supposed error of Ptolemy, 467—on geography, 465, 467, 473.
 GOSSIP, X. 718.
 Gossypium, cotton plant, V. 184; VII. 435.
 Gotaland, or Gothland, division of Sweden, XX. 864.
 GOTAMA BUDDHA, X. 719; VI. 397.
 GOTHA, in Germany, X. 725, 593; XIX. 681—library at, XIII. 433.
 —river and canal in Sweden, X. 725; XXI. 832.
 GOTHAM, in Nottinghamshire, X. 725; XVI. 340.
 GOTHARD (St), X. 725; II. 623; XX. 887; XXI. 495.
 Gotheite, mineral, XV. 108.
 GOTHENBURG, in Sweden, X. 725, 729, XX. 864.
 Gothic architecture, III. 445, 449, 456, 479, 517—more scientific than Grecian or Roman, 402—arches, 409—spires, 410—roof, XIX. 373—Wren not successful in, XXI. 936.
 —LANGUAGE, X. 725; IX. 392; XVII. 531, 539—alphabet, II. 615—Bibles, IV. 701; XIX. 840—its structure derived from that of the Greek, XIII. 210—Lord's prayer in, X. 729—race in Europe, IX. 388. See Goths.
 —school, in Swedish literature, XIX. 700.
 GOTHOFRED (Denis), X. 726.
 —(James), his edition of, and commentary on, the Theodosian code, VI. 741, 744.
 GOTHS, X. 726; V. 374; IX. 388; VI. 364—agriculture under the, II. 251—defeated by Constantine, VII. 302—their wars with the Romans, 309 *et seq.*—their conquest of Rome, X. 577; XIX. 363; of Italy, XII. 640—state of Italian art under them, XVII. 60—their kingdom in Spain, XX. 459, 460—their invasions of the Roman empire, XIX. 348 *et seq.* See Gothic.
 GOTTENBURG, X. 729. See Gothenburg.
 GÜTTINGEN, in Hanover, X. 729—library of, XIII. 420—magnetic conference at, XIV. 18—magnetical observations at, I. 994—university of, XXI. 492.
 GOTTLAND, island in the Baltic, X. 729.
 Gottsched, XIX. 717.
 GOUDA, town in Holland, X. 730.
 GOUDOK, three-stringed violin, X. 730.
 Gougane Barra, lake, VII. 371.
 Gough (Lord), his defeat of the Mahrattas, V. 669; XI. 168; of the Sikhs, V. 670; XVIII. 693—his victory at Gujerat, XI. 91—engagement at Chillianwalla, VI. 554; XVIII. 693.
 Goujon, sculptor, XIX. 865.
 Goulard's extract, IX. 457.
 Goulburn (Mr), his act for the suppression of the Catholic Association in Ireland, V. 642.
 Gould (Dr), of Boston, on the preservation of foot-prints, XVII. 130.
 —(John), his works on birds, XVI. 732, 824, n. 828.
 —(Mr), on ants, III. 261, 264.
 Gould's steam apparatus for ventilation, XXI. 541.
 Goura, bird, XVI. 194.
 Gourd, V. 193—culture of, XI. 736.
 —order of plants, V. 192.
 GOURDON, in France, X. 730.

GOU—GRA

- Gournay (Jean-Claude-Maria Vincent de), VIII. 374—on political economy, XVIII. 220.
 GOUROCK, X. 730.
 Goury (Mr Jules), his illustration of Moorish remains in Granada, III. 503.
 GOUSLY, ancient harp, X. 730.
 GOUT, X. 730—Barthez on, IV. 481.
 Govea (Andrew), V. 715, 716.
 GOVERNMENT, X. 731—modern improvements in, I. 24—Aristotle on, III. 566—governments of Asia, 750; Athens, IV. 213; Australia, 283; England, VIII. 756; ancient Egypt, 440; Denmark, VII. 749; France, X. 277; Greece, XI. 18; of the United States, XXI. 428; feebleness of existing, 437—(see other countries)—Buchanan's works on, V. 718—passive obedience, 719—always spends what it is able to extract from the people, VII. 140—tendency of colonial possessions to produce or prolong misrule, 146—evils of an undue expenditure by, 199—cases in which revolt against is justifiable, I. 544—manufacturing by, XIV. 290—as a basis of law, XIII. 256—offences of the press with respect to, 364—Paley on, XVII. 200—Plato on, 810. See Aristocracy, Democracy, Economists, Monarchy, &c.
 Governors, in mechanics, XIV. 410—in regulating gas-lights, X. 421—in steam-engines, XX. 595—marine, 653.
 GOWER (John), X. 739; VI. 434; XVIII. 120, 121.
 —or GWYR, peninsula, X. 740.
 Gowhatty, III. 763, 764.
 Gowland (Mr), his escapement, VII. 13.
 Gowrie, Carse of, VI. 276. See Carse.
 Gowrie's conspiracy in Scotland, XIX. 789—Lord Hailes' work on, VII. 635.
 GOYANNA, town in Brazil, X. 740.
 GOYAZ, town in Brazil, X. 740.
 Goyeneche (General), IV. 832.
 GOYT, river in Derbyshire, X. 740.
 Gozo, island, X. 740; XIV. 116.
 GOZZI (Gasparo and Carlo), X. 740, 741.
 Graaf (Regnier de), his anatomical researches, II. 762.
 Graah (Captain), his researches in Greenland, XI. 39, 41.
 GRABE (John Ernest), X. 741.
 GRABOW, in Germany, X. 741.
 GRACCHUS (Caius), X. 741; XIX. 318—Carthage rebuilt by, VI. 303.
 —(Sempronius), VI. 297.
 —(Tiberius), X. 741; XIX. 318.
 GRACE, days of, X. 741; IX. 428.
 —title, XXI. 291.
 —in theology, controversy of Malebranche regarding, I. 74—Warburton on the doctrine of, XXI. 835—means of, 219.
 —use of the word in the University of Cambridge, XXI. 462.
 GRACES, in mythology, X. 741.
 —the covenant of Charles I. with the Irish, XII. 480.
 Gracias, in Honduras, XI. 613.
 GRACIOSA, one of the Azores, X. 741; IV. 336.
 —one of the Canaries, VI. 167.
 Grackle, bald, XVI. 754—bare-necked, 751—paradise, 754—piping, 748.
 Gracula, genus of birds, XVI. 754.
 Gradients of railways, XVIII. 759, 794, 795—their influence on speed, 793.
 Gradino, in architecture, III. 510.
 GRADISKA, Turkish town, X. 741; XXI. 371.
 GRADUATION, of mathematical instruments, X. 741—of hygrometers, XII. 186—of thermometers, XXI. 223, 224.
 —in the arts, X. 742.
 GRÆCIA MAGNA, X. 742.
 Græco-Roman theory on the site of Troy, XXI. 358.
 Græcus (Magnus), his claims to the invention of gunpowder, XI. 150.
 GRÆVIUS (John George), X. 742; V. 786.
 GRAFTING, X. 743—by approach, II. 41—propagation by, XI. 694, 703; V. 167,

GRA—GRA

- XVII. 767—propagation of fruit-trees by, XI. 703.
 Grafton (Mr), on the deposit in gas reports, X. 414.
 — (Richard), printer, XVIII. 537.
 GRAHAM (George), X. 743—his optical instruments, III. 808—inventor of the mercurial compensation pendulum, VII. 7; and of the horizontal escapement, 33—his discovery of the daily variation of the needle, XIV. 4—on the length of the pendulum, XXI. 799.
 — (JAMES), marquis of Montrose, X. 743. See Montrose.
 — (Sir James), letters opened at the post-office by, XVIII. 412.
 — (JOHN), of Claverhouse, Viscount Dundee, X. 743—his military transactions in Scotland, V. 438—his advice to James II., 430—his proceedings in Scotland in favour of James II., 440—slain at Killiecrankie, 441.
 — (Prof.), his analysis of gunpowder, XI. 156—his chemical investigations, VI. 460—his law of the diffusion of gases, I. 935.
 — (Sir Robert), XIX. 758.
 — (THOMAS), Lord Lynedoch, X. 743; V. 608.
 Graham's Dike, III. 281.
 — Island, temporary appearance of, XXI. 607.
 — TOWN, X. 744, 714.
 GRAHAME (James), author of *The Sabbath*, X. 743.
 Graian Alps, II. 623.
 Grain coast, II. 227; XI. 89.
 — crops, II. 306—harvesting of, 313—when fit for reaping, 314—stacking of, ib.—comparative productiveness of different countries in, XVIII. 338—in Scotland, XIX. 796, 797; Ireland, XII. 514, 515 *et seq.*
 — Isle of, proposed dockyard at, VIII. 78.
 — weight, X. 744.
 GRAINGER (James), X. 744.
 — (Richard), his improvement of Newcastle, XVI. 169.
 GRAINS OF PARADISE, X. 744—of gunpowder, XI. 156.
 Grallaria, genus of birds, XVI. 753.
 Grallatores, order of birds, XVI. 794; XVII. 634.
 Grallina, genus of birds, XVI. 752.
 Gramineae, nat. order of plants, V. 215.
 Graminivorous animals, season of parturition of, III. 182.
 Grammalogue, XX. 676, 678.
 GRAMMAR, X. 744—Universal, ib.—Bacon's profound reflections on, I. 34—of the ancient Egyptian language, XI. 412—Greek, Latin, and Hebrew grammars, XVII. 526—characters of abbreviations in, VI. 419—Sanskrit, XVII. 527, 529—Horne Tooke on, XXI. 307.
 Grammatite, mineral, XV. 80.
 Gramme, French measure of weight, X. 284.
 Grammistes, genus of fishes, XII. 275.
 GRAMMONT, town of Belgium, X. 793.
 — bucanier, V. 712.
 — (COUNT), X. 793; XI. 199.
 — lace, XIII. 143.
 Grammysia, fossil mollusks, XVII. 105, 108.
 GRAMPAINS, X. 793; XIX. 793—geology of, XVII. 456.
 Grampound, disfranchisement of, V. 632.
 GRAMPUS, X. 793; XIV. 226—dentition of, XVI. 445.
 GRAN, Hungarian city, X. 793.
 GRAN CANARIA, X. 793; VI. 166.
 GRANADA, in Spain, X. 793—Moorish remains in, III. 503—the Alhambra at, II. 577—Moorish kingdom of, XX. 461, 463, 465—university of, XXI. 492.
 — (NEW), in South America, X. 795—Bolívar's campaign in, IV. 818—metallic produce of, XV. 248.
 — town of Central America, X. 798.
 — (FRAY LUIS DE), friar, X. 798.
 Granadilla, a fruit, V. 193.

GRA—GRA

- GRANARD, town in Longford, X. 798.
 GRANARY, X. 798.
 GRAND CANAL, in Ireland, X. 799; XIII. 83, 92, 93.
 — Duchies, in Europe, IX. 397.
 — ISLAND, in Niagara river, X. 799.
 — RAPIDS, town in Michigan, X. 799.
 — RIVER, in Michigan, X. 799.
 — SERJEANTRY, ancient tenure, X. 799.
 — Trunk Canal, V. 368; XX. 530.
 Grande-terre, in Guadeloupe, XI. 72.
 — (Rio), XIX. 175.
 GRANDEE, X. 799.
 Grandi (Abate), on the origin of modern copies of the Pandects, VI. 747.
 Grandipalpi, insects, IX. 96.
 GRANDOLLA, town in Portugal, X. 799.
 GRANGE, X. 799.
 — (Bouillon la), on the saltiness of the Mediterranean, XIV. 470.
 — (La). See Lagrange.
 GRANGEMOUTH, in Stirling, X. 799; XX. 704.
 GRANGER (James), biographer, X. 799.
 GRANICUS, river in Asia Minor, X. 800—battle of, XIII. 766.
 Granilla, VII. 50.
 GRANITE, X. 800; XV. 136, 183—classification of granitic rocks, 155; position and form of, 184—age and consolidation of, 186—joints in, 164—veins, 186—decomposition of, II. 390—soils from, 390—specific gravity of, XII. 88—graphic granite, IV. 413—of Aberdeenshire, II. 33; Argyleshire, III. 526; Banffshire, IV. 412; Egypt, III. 438; of Peterhead, XVII. 484—formations of, 587—as a building-stone, 619; XX. 711—granite works in Aberdeen, II. 31—facility with which it was wrought by the Egyptians, XX. 710—causes of its decay, 712—its resistance to crushing, 718.
 GRANJA (La), de Torrehermosa, Spanish town, X. 800, 212.
 GRANOLLERS, Spanish town, X. 800.
 Grant (Charles), Lord Glenelg, his corn-bill, V. 651—his resolutions respecting the corn trade, VII. 382—his India bill of 1833, XI. 528—his rules for intercourse with the Kafirs, XIII. 34.
 — (Sir Thomas), distilled water for steamships introduced by, XX. 24.
 — (Mr), his life-preserver, in shipwreck, XIII. 439.
 — (Madame), XXI. 12 and *n.*
 — (Prof.), on zoophytes, XXI. 990, *n.* 6, 999, 1000, 1008.
 GRANTHAM, town in Lincolnshire, X. 800; XIII. 492.
 Granton Pier, IX. 795.
 GRANULATION of metals, X. 800—of gunpowder, XI. 155.
 Granulite, rock, XV. 137.
 Granvelt, bishop of Arras, XI. 563.
 GRANVILLE, French seaport, XI. 1.
 GRAO, Spanish seaport, XI. 1.
 GRAPE, XI. 1; IX. 759—of New South Wales, IV. 280—in Egypt, VIII. 431. See Wine-making.
 — vine, V. 187—culture and varieties of, XI. 707, 758—of the United States, XXI. 425, 888—dwarf vine of the Ionian Islands, XII. 445.
 — disease, X. 246, *n.*, 247; XXI. 885, 887—in the Canaries, VI. 164. See Oidium.
 — in veterinary science, XXI. 579.
 GRAPE-SHOT, XI. 1, 142.
 Grape-sugar, II. 380; V. 320; VIII. 47; IX. 756.
 Graphipterus, genus of insects, IX. 59.
 GRAPHITE, XI. 1; VI. 471; XV. 123.
 GRAPHOMETER, XI. 1.
 GRAPNEL, or Grappling, XI. 1; III. 118.
 Graptolites, genus of fossil fishes, XII. 335; XVII. 125.
 Graptolites, fossils, XVII. 95.
 Graptolites, XVII. 95.
 GRASMERE, village and lake in Westmoreland, XI. 1; XXI. 842, 843.
 GRASS, XI. 1; V. 215—culture of grasses,

GRA—GRA

- II. 322—kinds best adapted for water-meadows, XII. 613—grasses peculiar to Cape Verde Islands, XXI. 544.
 Grass lands, produce of, in England, VIII. 724.
 — walks, XI. 747.
 GRASSE (La), French town, XI. 1.
 — (Count de), defeated by Rodney, V. 500—his hospitable treatment in England, 501, *n.*
 Grasser (Jacob), VII. 730.
 GRASSHOPPERS, XI. 1; IX. 160—their cohabitation with ants, III. 264.
 Grassias, XI. 91, 92, 466; XIV. 120.
 Grassner (F.), his works on insects, IX. 24.
 Grateloupia, fossil mollusks, XVII. 108.
 Grates, for furnaces, X. 354—for houses, XIX. 614—prevention of smoke in, XX. 353—cause of the different feeling produced by the heat of a stove and a grate, 738.
 GRATIANUS (Augustus), XI. 1; VII. 310.
 — Benedictine monk, XI. 2—his *Decretum*, VI. 189; XXI. 449.
 Grating, in furnaces, X. 354.
 GRATIUS (Faliscus), Roman poet, XI. 2; XII. 32.
 GRATTAN (Henry), XI. 2; XII. 496—his motion on the incapacity of George III., V. 533—his opposition to the union of Ireland with Britain, 572—his motions for Catholic emancipation, 624, 625.
 GRATZ, in Austria, XI. 4—university of, XXI. 492.
 Grauculus, genus of birds, XVI. 748.
 GRAUDENS, Prussian town, XI. 4.
 GRAUNT (John), XI. 4; XII. 394, 396—on bills of mortality, XV. 600.
 GRAVE (accent), XI. 5; III. 75.
 — (tomb), XI. 5; V. 773—space occupied by, XIX. 620—time that should elapse before graves be reopened, 620.
 Gravel (urinary)—Magendie's theory of, VIII. 24—in the domestic animals, XXI. 570—surgical treatment of, XX. 830. See Calculus, Lithotomy.
 — used in masonry, XX. 711.
 Gravel-walks, XI. 747.
 GRAVELINES, French town, XI. 5.
 Gravenhorst (J. L. C.), his entomological works, IX. 13.
 Graver, VIII. 802, 803.
 Graves (The), wines of, XXI. 883.
 GRAVESANDE (William Jacob), XI. 5—his air-pump, XVIII. 36.
 GRAVESEND, town in Kent, XI. 5—population, XIII. 67.
 Gravesend (Mr), on the resistance of fluids, XII. 159.
 GRAVINA (Giovanni Vincenzo), XI. 5.
 — city of Naples, XI. 6.
 Graving-dock, VIII. 76.
 GRAVITATION, XI. 6—Newton's discovery of, I. 670; IV. 220; III. 803; XVI. 206—the cause of acceleration of falling bodies, II. 72—its action in the planetary system, III. 809; IV. 97—Hooke on, 220; I. 675. See Dynamics, Gravity.
 — theory of the motion of glaciers, X. 637.
 Gravity (centre of). See Centre of Gravity.
 — escapements, VII. 11.
 — numbered among the virtues by the Italians, II. 741.
 — (SPECIFIC), XI. 6; XII. 84—tables of, 88.
 GRAY, French town, XI. 6.
 — (Dr J. E.), his zoological catalogues of the British Museum, XII. 328; IX. 19—on the chitonidæ, XV. 379—on the genus *crepidula*, 381—his catalogues of the mollusca, 327—his arrangement of the lampreys, XII. 229—on polypes, XXI. 1003, 1004.
 — (G. R.), his entomological writings, IX. 19—his works on birds, XVI. 828.
 — (John), his improvement of steam-engine valves, XX. 585, 586.
 — (Lady Jane). See Grey.
 — (M. le), on photography, XVII. 549.

GRA—GRE

- Gray (Mr), on zoophytes, XXI. 987, 992.
 — (Mrs), her work on the mollusca, XV. 327.
 — (Mrs Hamilton), on Etrurian cities and buildings, IX. 361; III. 499, *n.*
 — (Stephen), on electricity, I. 660, 733; VIII. 524, 565—on the microscope, XIV. 768, 775.
 — (THOMAS), poet, XI. 7—his estimate of the merits of Rousseau's *Emile*, I. 184—fond of alliteration, II. 593—poetry of, XVIII. 125.
 — colour, dyeing of, VIII. 313—varieties of, XV. 59.
 Gray's Inn, XII. 384; XIII. 672.
 Grayling, XII. 244—its flesh, IX. 763—angling for, III. 158, 149, *n.*
 GRAYWACKE, XI. 8. See Greywacke.
 GRAZALEMA, Spanish town, XI. 8.
 Grazing, II. 324—of cattle and sheep, 325.—farms, in Jamaica, XII. 680.
 Grease, a disease in horses, XXI. 579.
 Great, various meanings of the word, VIII. 9.
 — SALT LAKE, XI. 8; XXI. 498—city of the, XIX. 588.
 — Western Railway, telegraphs on, XXI. 112.
 Greathead (Henry), his lifeboat, XIII. 445.
 Greathed (Col.), XVI. 312.
 Greatprimer type, XXI. 401.
 GREAVES, armour, XI. 8.
 — (JOHN), XI. 8—on Roman money, XV. 433.
 Grebes, birds, XVI. 809.
 GREECE, XI. 9; IX. 403—history of, XI. 543—works on the architectural remains of, III. 456—Greek structures, 460, 461—were the Roman laws of the twelve tables derived from? VI. 738, 739, 740—Persian invasion of, IV. 198—agriculture of, II. 249—commerce of, VII. 185—mines, 188—coins, 67—civilisation and colonisation of, from Egypt, VIII. 459; XVII. 787—emigration from, 650—medicine in, XIV. 451, 452, 455—origin of classic philology in, XVII. 518; during the decline of the Roman empire, 520—height of mountains in, 642, 643—old sceptical school of, XIX. 706; new, 707—suicide in, XX. 799—ancient wines of, XXI. 882. See Chronological Table, VI. 677 *et seq.*—also Greeks, Attica, Athens, &c.
 — (modern), hives of, III. 296—conduct of France towards, in 1827, X. 194—revolutions in, XI. 22, 31—missions established in, XV. 271—historical writers, XI. 549—weights and measures, XXI. 811—woollen manufactures of, 913—university in, 492—map of, XI. Plate.
 Greek architecture, III. 440, 460, 466 *et seq.*—remains of, 456, 460 *et seq.*—partly borrowed from Asia, 400—its introduction and progress in Britain, 456—Doric, 463—Ionic, 465—Corinthian, 466—mouldings and ornaments of, 467—beauty of, IV. 549—baths, 505—theatres, III. 442—temples, 461—supposed knowledge of the arch by the Greeks, 401—abacus, II. 5.
 — CHURCH, XI. 33; VI. 713—mysticism in, XV. 755—extent of its dominion in Europe, IX. 394—ordination in, XVI. 703—in Ionian islands, XII. 446—funeral rites of, X. 344—its claim to the guardianship of the holy places, XIX. 500—in Russia, 526, 527—in Syria, XX. 908.
 — FIRE, XI. 37; IX. 586; XI. 151.
 — language, IX. 390; XIII. 210—grammars and lexicons, XVII. 526—its influence in Rome, XIX. 313—introduced and publicly taught in England, VIII. 796—no indefinite article, X. 751—moods and tenses, 765, 766 *n.*, 769—ablative case, II. 42—accents, 75—study of, at Oxford, XXI. 457—bibles, IV. 698; XIX. 839—editions of the classics, IV. 710—Erasmus and Sir Thomas Smith on its pronunciation, IX. 322—modern languages of Greece, XI. 22.

GRE—GRE

Greeks (ancient), their acclamations, II. 78—abortion among, 44—adoption, 149—punishment of adultery, 166—algebra unknown to the early Greeks, 482—their manner of writing, 611—alphabet, 612—knowledge of anatomy, 748 *et seq.*—religion, IV. 216—their perfection in the fine arts, III. 706—statues, 707–709—theatres, 442, 463; VIII. 135—commerce in the Black Sea, IV. 745—numerals, III. 575; VI. 419—mode of calculation, II. 5; III. 577—army, 624—astronomy, 787—their care to preserve the balance of power, IV. 389—baths, 505—bells, 628—beards, 527—may have derived many of their metaphysical speculations from India, V. 271—their beer, 318—brickmaking among the, 342—burials, 774—burning of the dead, 795—their knowledge of burning-glasses, VI. 3—calendar, 76, 79, 665—camps, 122—caps, 205—their knowledge of anæsthetics, 632—cock-fighting, VII. 50—colonies, 135—dancing, 645—dials, 773—divorces, VIII. 67—drama, 134*, 136, 138—their skill in drawing, 170—dyeing, 273—their connection with Egypt, 458; and rule there, 467—influence of local circumstances on their character and government, XI. 11, 12—exposing of children by, IX. 457—festivals, 494—funeral rites, X. 343—gnomon supposed to be invented by, 464—geometers, 497—gymnasia and gymnastic exercises, XI. 168—their games, X. 397—racing, *ib.*—horsemanship, XI. 672, 673—historical writers, 548—hymns, XII. 188—their rates of interest, 426—law, XIII. 257—libraries, 382—school of painting, XVII. 46, 49, 81, 82—poetry, XVIII. 98—monarchy, XV. 412—mourning, 667—mysteries, 753—mythology, 766; IV. 216—education, XV. 807—coins, XVI. 351, 353, 354, 356, 360; VII. 67; XV. 433 and *n.* 1—oaths, XVI. 398—pantheism, XVII. 231—vases, XVIII. 431—primogeniture among, 515—sculpture, XIX. 850 *et seq.*—sanitary measures, 602—shipping, XX. 117—shoes, 208—slavery, 319—surgery, 809—masonry, 710—uses to which their theatres were applied, XXI. 176—measures, 804—weights, 806. See Greece.

(modern), their army, III. 661—sieges of Athens by, IV. 174—their war with the Turks, V. 651; XI. 30; VIII. 494—Lord Byron's aid to, VI. 40; XI. 28—language, 22—monarchy, XV. 413. See Greece (modern).

GREEN BAY, XI. 37; XXI. 893.

—colour, XI. 37; VI. 644—varieties of, XV. 59—of plants, XVI. 693—dyeing, VIII. 309, 319—for printing, XVIII. 556.

—MOUNTAINS, XI. 38; XV. 522; XXI. 550.

Green (Mr), on the mathematical theory of electricity, VIII. 533; I. 989—his modification of Fresnel's theory of reflection, 920 and *n.* 6.

—park, London, XIII. 668.

—river, XIII. 69.

—teas, XXI. 86—artificial colouring of, 87.

Green's fuel economiser, XX. 604, 605.

—hydrogen lamp, VIII. 626.

GREEN-CLOTH, Board of, XI. 37, 374, 774.

Green-earth, XV. 83.

Green heart, timber, V. 204; XXI. 277—not liable to injury from marine worms, XI. 225.

GREEN-HOUSE, XI. 38, 755—greenhouse plants, 756.

GREENCASTLE, XI. 37.

—in Down, VIII. 124.

GREENE (Robert), XI. 37—on Shakspeare, XX. 84.

Greener (William), on fowling-pieces, XX. 213, 217.

GREENLAND, XI. 38—early Norwegian settlements in, II. 698—extent of, 667—depression of the coast of, XV.

GRE—GRE

167—height of mountains, XVII. 645—whale, XIV. 233—missions established in, XV. 271—discovered by the Icelanders, XII. 198—voyages to, XVIII. 162 *et seq.*

GREENOCK, Scotch town, XI. 44; XIX. 9.

Greenockite, VI. 51, 492; XV. 121.

Greenovite, XV. 110.

Greensand, XV. 210—in Scotland, XIX. 793.

Greenshank, bird, XVI. 805.

Greenstone, XV. 135—ash, 136—its columnar structure, 166—relations between it and felstone, 189—beds of, in aqueous rocks, 187—its absorbent power, VII. 108; XI. 271.

GREENWICH, town in Kent, XI. 47—population, XIII. 67—naval asylum at, XVI. 120.

—HOSPITAL, XI. 48; XIII. 68; XVI. 119; XXI. 936—foundation of, XIII. 686—roof of its chapel, VI. 266—schools of, XVI. 120—pensioned officers on, *ib.*

—Observatory, III. 816; XI. 47—transit circle at, I. 850—mural circles and transit instrument, IV. 153—Bradley's improvements in, V. 264—Maske-lyne's observations and improvements at, I. 833, 835—Pond's improvements, 849—meteorological observations at, XIV. 672, 675, 686—Airy's improvements, I. 850.

—catalogue of stars, IV. 95.

GREET, river, XI. 49.

Gregarina, zoophytes, XXI. 980.

GREGORIAN CALENDAR, XI. 49; VI. 78, 85–89, 668.

—reflecting telescope, XVI. 533; XXI. 126.

Gregorius, Roman lawyer, VI. 742.

—OF NAZIANZUM, XI. 51; XV. 407.

—IX. (Pope), his Decretalium Compilatio, VI. 189—inquisition confirmed by, XII. 387.

GREGORY the Great, XI. 49—on the decay of the city of Rome, XIX. 364.

—II., bishop of Rome, XIII. 640, 641.

—VII. (Pope), XI. 50; XII. 644—papal dominion under, VI. 188.

—XIII. (Pope), his reform of the calendar, VI. 78, 82.

—(David), XI. 53.

—(Dr David), professor of astronomy at Oxford, XI. 53; I. 697.

—(Duncan), I. 807 *n.* 2.

—(JAMES), mathematician, XI. 53—his Optica Promota, I. 629; II. 88—his reflecting telescope, 88; I. 748—his discovery of an algebraic series, 559—his burning mirror, VI. 11—his attack on George Sinclair, IV. 462, *n.*—on optics, XVI. 532—on the quadrature of the circle, XX. 522, 523.

—(Dr JAMES), XI. 55—on the moods of verbs, X. 762, 768–770, *n.*

—(Dr JOHN), XI. 53—his connection with Dr Cullen, VII. 574—his lectures on the Duties and Qualifications of a Physician, I. 224—on the union between mind and body, *ib.*—Smellie's Life of, XX. 337.

—(Mr), of Lisbon, his slide-valve for locomotives, XX. 615.

—name of a Scottish family, XI. 53.

—OF NYSSA, XI. 52—on Balaam, IV. 382—his Oratio Catechetica, XXI. 183.

—of St Vincent, on the quadrature of the circle, XX. 523.

—OF TOURS, XI. 52, 548.

—(OLINTHUS), LL.D., XI. 57—his notices of Robert Hall, 190 *et seq.*

—THAUMATURGUS, XI. 52.

—(Dr William), his letters on animal magnetism, XX. 436, 441; his translation of Reichenbach's work on that subject, 434.

GRIFFENBERG, in Pomerania, XI. 57.

GRIFFENHAGEN, town in Pomerania, XI. 57.

GRIEFSWALD, town in Pomerania, XI. 57—university of, XVIII. 673; XXI. 492.

GREIZ, German town, XI. 57.

Grellman on the gypsies, XI. 170.

GRE—GRI

GRENADA, or Granada, island, XI. 57—sugar-ants of, III. 261, 263; mode of destroying them, 266—naval engagement between the British and French at, V. 484.

—New. See Granada, New.

GRENADE, XI. 58.

GRENADIER, XI. 58—guards, 74.

Grenadines, islands, XI. 58.

Grenelle, Artesian well of, XV. 184.

Grenfell on the national debt, X. 334.

Grengesite, mineral, XV. 78.

Grenié (M.), his improvements on the organ, XVI. 712.

GRENOBLE, in France, XI. 58; XII. 627—glove trade of, X. 256—insurrection at, 176—population, 277.

Grenville (George), XI. 59—prime minister, V. 467.

—(LORD), XI. 58. See Wyndham, Right Hon. William.

—(RICHARD), Earl Temple, XI. 58; V. 468—his opposition to the peace with France in 1801, 586.

—(Hon. Thomas), his bequest to the library of the British Museum, XIII. 390.

GRESHAM (Sir Thomas), XI. 59.

—COLLEGE, XI. 60; IV. 452; XIII. 667.

GRESSET (J. B. Louis), XI. 60; XVIII. 117.

Greswell, on the dates of St Paul's epistles, XVII. 350.

GRETA, rivers in Cumberland, XI. 60; and Yorkshire, 60, 61.

GRETNA GREEN, XI. 61—irregular marriages at, IV. 651; XII. 51.

Greuze, painter, XVII. 76.

GREVILLE (Fulke), Lord Brooke, English poet, XI. 61.

—(Right Hon. Charles), his account of corundum, VII. 420.

Grevius. See Grævius.

Grew (Nehemiah), XI. 61; XIV. 461—on comparative anatomy, II. 763—on the sexual organs of plants, V. 152.

Grey colour, dyeing of, VIII. 313—varieties of, XV. 59.

—(Dr), his Memoria Technica, XV. 287.

—(EARL), XI. 61—promoter of the association, "Friends of the People," V. 542—on the balance of power, IV. 392, *n.* 2—his motions for parliamentary reform, V. 542, 549—his motion in 1795 for negotiations with France, 555—his opposition to the union with Ireland, 572—motion in 1801 for inquiry into the state of the nation, 577—refusal to join the ministry in 1812, 612—his administration, 660—his resignation of office and recal, 663—his coercion bill for Ireland, *ib.*—his resignation in 1834, 664.

—(George), papyrus brought from Egypt by, II. 607.

—(George A.), on paring and burning moorlands, II. 359.

—(Sir George), on the mountains of New Zealand, XVI. 232—his policy in Kafraria, XIII. 35.

—(LADY JANE), XI. 63; III. 723; VII. 484; VIII. 707–709.

—(Major-General), his defeat of the Mahrattas in 1843, V. 669; XI. 168.

—(W. H.), his report on savings banks, XIX. 664.

GREYHOUND, XI. 64, 771.

GREYWACKE, XI. 64. See Silurian and Cambrian rocks.

Grier (R. M.), his photographic process, XVII. 546.

GRIESBACH (J. Jacob), XI. 64—his edition of the New Testament, IV. 698; XIX. 837; on the original text of, 835.

Grieve (John), his kindness to Hogg, XI. 577.

GRIFFIN, XI. 64.

Griffith (Dr), on test objects for the microscope, XII. 804—on the geology of Ireland, XV. 200, 202.

—(Mr), on Donegal, VIII. 105.

GRI—GRO

Griffith's Animal Kingdom, quoted, XI. 291, *n.* 1, 293, 298; XIX. 60 *n.*, 68; XXI. 997, *n.* 6.

—screw-propeller, XX. 658.

Griffiths on point-blank range, XI. 105.

Griffon, bird, XVI. 738.

Grillparzer (Franz), his poetry, XVIII. 119.

Grilse, IX. 596; XII. 239—conversion of smolts into, IX. 596—their conversion into salmon, 597—dates of smolts returning from the sea as grilse, 596—average weight of, in the Tweed, *ib.*, *n.* 3—marked grilse recaptured as salmon, 597.

GRIMALDI, Genoese family, XI. 64.

—(ANTONIO), XI. 64.

—(DOMENICO), XI. 64.

—(F. M.), on the inflection and interference of light, I. 630, 895; III. 801; XVI. 533, 598—on the colours of light, 578.

—(GERONIMO), XI. 65.

—(GIOVANNI), XI. 64.

—(RANIERI), XI. 64.

GRIMM (F. Melchior), Baron, XI. 65—his misrepresentation of a saying of Fontenelle, I. 23, *n.*—on liberty and necessity, 150, 270—an abettor of atheism, 182—his account of Diderot, VIII. 15—his opinion of La Harpe, XI. 231—on Hume, XII. 4, *n.* 1—on Beccaria, IV. 557.

—(James Lewis), his philological researches, XVII. 528.

GRIMMA, town in Saxony, XI. 65.

GRIMSBY (Great), in Lincoln, XI. 65.

—harbour, VIII. 75.

Grimshaw on bleaching linen, IV. 768.

Grimshaw's rope-machinery, XIX. 409.

GRINDELWALD, Swiss village, XI. 65.

Grinders, teeth, in man, III. 25—in animals, 107—in the elephant and mammoth, XVI. 475.

—artisans, diseases of, XIV. 442; XX. 98—grinders' asthma, XVI. 128.

Grinding, of plate-glass, X. 666—of specula, XXI. 135.

Grinding-mill for gunpowder, XI. 154.

GRINDSTONE, XI. 65—quarries of, at Gateshead, X. 439.

GRINSTEAD (East), town in Sussex, XI. 65.

Gripes, in horses, XXI. 566.

Grison, in zoology, XIV. 156.

GRISONS, Swiss canton, XI. 66; XX. 882.

Gristes, genus of fishes, XII. 276.

Gristle, II. 831. See Cartilage.

GRIT, or GRITSTONE, XI. 66; XV. 141.

GROAT, XI. 66.

GROATS, XI. 66.

GROCYN (William), XI. 66.

GRODNO, Russian town and province, XI. 66; XIX. 521.

Grogginess, or contraction of the foot, in horses, XXI. 561.

GROIN, XI. 67.

—or groining, in architecture, XI. 67; III. 510; XX. 731.

GRÖNINGEN, in Holland, XI. 67—university of, 590; XXI. 492.

GRONOVIVS (J. Friedrich), XI. 67.

—(JACOBUS), XI. 67.

GROOM, XI. 68, 669—of the stole, 775—grooms of the bedchamber, *ib.*, 776; in waiting, 775.

Groombridge's catalogue of stars, IV. 95.

GROOTE EYLANDT, island, XI. 68.

Groove, in joinery, XII. 808.

Groppite, mineral, XV. 79.

Grorollite, mineral, XV. 112.

GROSE (Francis), XI. 68.

GROSS, XI. 68—weight, *ib.*; III. 595—in law, XI. 68.

Gross-beak, evening, XVI. 761—pine, 762—Philippine, 760—sociable, *ib.*

GROSSASPERN, XI. 68. See Aspern.

GROSSENHAIN, town of Saxony, XI. 68.

Grossulariaceæ, nat. order of plants, V. 194.

GROSSWARDEIN, city in Hungary, XI. 68.

Grote (Mr), his History of Greece, IV. 218—on Homer, XI. 596 *et seq.*—on the

GRO—GUA

- ethics of Homer, XIII. 259—on the Helots, XI. 308—on the Pelasgi, XVII. 370.
- GROTESQUE, XI. 68.
- GROTIUS (Hugo), XI. 68, 573; V. 718—his work *De Jure Belli et Pacis*, I. 38, 84, 85, 89, 331—period when his writings began to be generally studied, 46—his opinion of Raimond de Sebonde's principles, 52—Bentham on, 91, *n.*—Samuel de Coccei's strictures on some of his opinions, 92—his History of the Netherlands, 433—his answer to the ethical principles of Carneades, 332—on baptism, IV. 422.
- (Gulielmus), XI. 70.
- GROTTAMARE, in the Papal States, XI. 70.
- Grotthus on electro-chemical decomposition, XXI. 628.
- GROTTO, or Grotta, XI. 70—of Antiparos, III. 275. See Cave.
- del Cane, XI. 71; II. 241; XX. 239—carbonic acid gas of, VI. 472.
- Grottoes of Benec-Hasan, VIII. 504.
- Grouchy (General), at Waterloo, XXI. 718.
- Ground, for aquatinta engraving, III. 332.
- Ground-nuts, XVI. 395—oil of, 495.
- Ground-slugs, XV. 374.
- Groundsel, plant, V. 117.
- GROUP, in painting, &c., XI. 71.
- GROUSE, XI. 71; IX. 762—heteroclyte, XVI. 792—pin-tailed, 791—red, *ib.*—sand, *ib.*—wood, *ib.*
- Grouse-shooting, XX. 224.
- GROUT, XI. 71.
- GROVE, XI. 71; XVII. 772.
- (Mr.), on physiology, XVII. 656.
- (Mr.), his mode of correcting aberration, XXI. 125—his constant battery, 616—his gas voltaic battery, 618—method of transforming daguerreotype plates into engraved plates, 636—experiments in voltaic electricity, 627, 630, 631, 633, 634.
- Grover (Rev. Mr.), on the magnetic pole, XIV. 51—on terrestrial magnetism, 67.
- Growler, screw gunboat, description of, XX. 665.
- GROWTH, XI. 71; II. 747—of animals, see Physiology—of plants, V. 99, 103.
- Groyne, their use in tidal rivers, XVI. 83.
- Grozler's specimen of Chinese poetry, VI. 578—on Chinese architecture, 582.
- GRUB, larvæ of insects, XI. 71.
- Grubb (Mr.), his apparatus for making lenses and specula, XXI. 135, 142.
- Grubbers, II. 271—their substitution for the plough, 290.
- GRUBENHAGEN, XI. 71, 434.
- Grubenhalm (Ulrich), his wooden bridges, VI. 384.
- Grueber's travels in China, III. 754.
- Grunauite, mineral, XV. 116.
- GRUNBERG, in Prussian Silesia, XI. 71.
- Grundler (G.), his work on insects, IX. 23.
- Grundtvig (N. F. S.), Danish author, XIX. 695.
- Grundulus, genus of fishes, XII. 252.
- GRUS, constellation, XI. 71; IV. 80—genus of birds, XVI. 797.
- GRUTER (Jan), XI. 71.
- GRUYÈRE, Swiss town, XI. 71; X. 305.
- cheese, X. 304, 305.
- GRY, a measure, XI. 71.
- Gryllotalpa, genus of insects, IX. 158.
- Gryllus, genus of insects, IX. 157.
- Gryphæa, genus of mollusks, XVII. 105, 106.
- Gua (Du), on equations, IX. 287, 290.
- GUADALAJARA, in Spain, XI. 72; XX. 493.
- in Mexico, XI. 72; XIV. 724.
- GUADALCANAL, Spanish town, XI. 72.
- Guadalcanar, IV. 265.
- GUADALETE, river, XI. 72.
- GUADALOUPE, island, XI. 72.
- GUADALQUIVIR, river, XI. 72; III. 123; XVII. 647; XX. 487.
- GUADALUPE, Spanish town, XI. 73.
- Hidalgo, peace of, XIV. 714.
- Guadarrama, Spanish mountains, XX. 487.
- GUADI, XI. 73.
- Guadiana, river, XX. 487; XVII. 647; XXI. 302.

GUA—GUE

- Guadiana or Durango, city in Mexico, VIII. 264.
- GUADIX, Spanish city, XI. 73.
- Gauge, in railways, XVIII. 753, 794.
- Guahan, island, XVIII. 269; XI. 73.
- Gualac, resin, V. 188.
- GUAIACUM, XI. 73; V. 188.
- GUAM, island, XI. 73.
- GUAMANGA, Peruvian city, XI. 73.
- Guan, bird, XVI. 785.
- Guanaco, IV. 823; II. 605; VI. 549; XIV. 295; XVII. 473.
- GUANAJUATO, XI. 73; XIV. 708, 723, 718—proportion of baptisms and burials in, XVIII. 342.
- Guanas, reptiles, XIX. 33.
- Guanaxuato silver mines, XV. 235.
- GUANCAVELICA, Peruvian town, XI. 73.
- Guanches, VI. 163.
- Guanite, mineral, XV. 96.
- GUANO, XI. 73; II. 299, 408—11—use of by the ancient Peruvians, 251; XVII. 461—its introduction into Britain, II. 264—imports of, into the United Kingdom, VIII. 734—causes of its value, VI. 522, 524—composition of different kinds of, II. 408, 409—adulteration of, 410—of the Lobos islands, XIII. 531—its fertilising power on the sugar-cane, XIV. 363—of the Chincha islands, XVII. 473.
- Guaporé, river, XIV. 357.
- Guaraná plant, V. 186.
- GUARANI, XI. 73; II. 691; IX. 348; XVII. 268—language of, XIII. 224.
- GUARANTEE, XI. 73—insurance companies, XII. 408.
- GUARD, XI. 74—national, of France, X. 272.
- GUARD-BOAT, XI. 74.
- GUARD-SHIP, XI. 74.
- GUARDAMAR, Spanish town, XI. 74.
- GUARDIA, XI. 74.
- GUARDIAN, XI. 74—of the spiritualities, XI. 75—of the temporalities, *ib.*—among the Arabs, III. 352.
- GUARDS (the), XI. 74; III. 665—horse guards, IX. 74—horse grenadier guards, *ib.*—foot, *ib.*—Scotch, *ib.*—yeomen of the, XI. 74; III. 324.
- Guarini, XVII. 268.
- (GIOVANNI BATTISTA), XI. 75; XVIII. 111.
- GUASTALLA, Italian town, XI. 76.
- GUATIMALA, XI. 76; II. 705—declared independent, 702—height of mountains in, XVII. 645—map of, XIV. Plate.
- LA ANTIGUA, XI. 78.
- LA NUEVA, XI. 78.
- Guatimozin, king of Mexico, XIV. 706.
- GUAYA, XI. 78; V. 192.
- Guaviare, river, VII. 133; XVI. 716.
- GUAYAQUIL, XI. 78; VIII. 387.
- river, XI. 78; VII. 134.
- GUAYMAS, Mexican port, XI. 78; XIV. 727.
- GUAYRA, (La), seaport in Venezuela, XI. 78.
- GUBBIO, Italian town, XI. 78.
- GUBEN, Prussian town, XI. 79.
- Guber, African country, XI. 778.
- GUDGEON, in mechanics, XI. 79; VI. 261.
- fish, XI. 79; IX. 764—angling for, III. 161.
- GUEBRES, XI. 79. See Fire-worshippers.
- Guelder rose, XVII. 764.
- GUELDERLAND, in Holland, XI. 79.
- GUELTERS, town in Rhenish Prussia, XI. 79.
- GUELPH, order of, XI. 79, 340; XIII. 119.
- GUELPHS, XI. 79.
- and Ghibelins, XI. 79; VII. 296; X. 602; XII. 645 *et seq.*
- Guenee (A.), his entomological works, IX. 17.
- Guenon, in zoology, XIV. 140.
- GUERANDE, French town, XI. 79.
- GUERCINO, XI. 79. See Barbieri.
- GUERICKE (Otto von), XI. 79—on electricity, VIII. 523—his invention of the air-pump, I. 596; IV. 451; XVIII. 32—his experiment of the hemispheres, XX. 539.
- Guérinan (M.), surgical operation on a patient in hypnotic sleep, XX. 433.
- Guerilla warfare in Spain, XX. 472, 478, 471.
- Guerin-Meneville (F. E.), his works on insects, IX. 16.

GUE—GUI

- GUERNSEY, island, XI. 79.
- Guerrero, president of Mexico, XIV. 712.
- Mexican state, XIV. 724, 718.
- GUESCLIN (Bertrand du), count of Longueville, XI. 80.
- Guest (Mr.), XX. 510.
- Guettardia, fossil sponges, XVII. 93.
- Guevel, in zoology, XIV. 210.
- Gugenbuhl (Dr), his institution for cretins, XIV. 528, 539.
- Guglielmini on hydraulics, XII. 71, 143; XIX. 184, 185 *et seq.*
- Guhliche's process for dyeing violet, VIII. 312, 214—and puce colour, 313.
- Guicum, action of light on, XVI. 594.
- GUIANA, XI. 81—ant-hills in, III. 263—Raleigh's expeditions to, XVIII. 801, 802—serpents of, XIX. 54—timber of, XXI. 277—weights and measures, 811.
- BRITISH, XI. 81.
- DUTCH, XI. 84.
- FRENCH, XI. 84—convict settlement in, XVIII. 576.
- GUIBERT, (J. A. H., Count de), XI. 84—on war, III. 619; XXI. 712, 714—the military art, III. 620, 622—on the tactics of the Greeks, 624. See Army, *passim*.
- GUICCIARDINI (Francisco), XI. 85.
- (Luigi), XI. 86.
- Guiccioli (Countess), VI. 39.
- Guicowar, family of Mahratta chiefs, V. 674; XI. 93.
- GUIDO ARETIN, XI. 86; III. 522.
- RENE, XI. 86; III. 709, 710; XVII. 73.
- di Sienna, painter, XVII. 61.
- GUIDONES, XI. 86.
- GUIENNE, or Guyenne, in France, XI. 86; X. 277.
- GUIGNES (Joseph de), XI. 86—on China, VI. 554, 568, 579.
- Guigniant (M.), his report on M. Lebarbiers' search for ancient MSS. in the east, XIII. 384.
- (M.), on the worship of Buddha, V. 724.
- GUILD, XI. 87; X. 309, 624—guilds of London, XIII. 677—in Preston, XVIII. 510—guilds of workers in wool, XXI. 914—disputes between the alien clothiers and the London guild, *ib.*—dean of, VIII. 404.
- GUILDFORD, town in Surrey, XI. 87; XX. 836, 837.
- GUILDHALL, London, XI. 87; XIII. 677.
- Guilding (Rev. Landsdown), his contributions to entomology, IX. 13—on luminous medusæ, XXI. 998, *n.* 2.
- Gulldry courts, in Scotland, VIII. 404.
- Guillemots, birds, XVI. 810.
- Guillé (Dr), on the blind, IV. 774, 778.
- GUILLEN (John), XI. 87.
- GUILLLOTINE, XI. 88; IV. 591; XIV. 445.
- chaff-cutter, II. 284.
- Guilliche, in architecture, III. 510.
- GUIMARAENS, Portuguese city, XI. 88.
- Guinand (M.), his flint-glass discs for telescopes, XXI. 121.
- GUINEA, in Africa, XI. 88; II. 226—ants in, III. 263—slave-trade of, XX. 320.
- New, or Papua, XI. 89; IV. 262.
- (Gulf of), II. 212.
- gold coin, XI. 89; XV. 441; VII. 79—superseded by sovereigns, 81.
- GUINEA-FOWL, XI. 89; II. 218; IX. 762; XVI. 788.
- Guinea-grass, in Jamaica, XII. 679, 680, 682.
- GUINEA-PIG, XI. 89; XIV. 188.
- Guinea-worm, XI. 307; XXI. 974.
- GUINGAMP, town in France, XI. 89.
- GUIPUZCOA, in Spain, XI. 89.
- Guisards, in Scotland, VIII. 134*.
- GUISBOROUGH, town in Yorkshire, XI. 90.
- GUISCARD (Robert), XI. 90; VII. 316; XX. 257.
- Guischardt on military affairs, III. 623, 624 *et seq.*
- GUISE, town in France, XI. 90.
- or Guyse, family name, XI. 90; XIII. 695.
- (Duke of), X. 32.
- (Francis de), la Balafré, XI. 90.

GUI—GUR

- Guise (Henri de), XI. 90.
- Guilt-guilt, bird, XVI. 769.
- GUITAR, XI. 90; XV. 741.
- Guizot (M.), X. 196 *et seq.*—his ministry, 216, 219—on Gibbon's treatment of Christianity, 617—his remonstrance against the extinction of Cracow, VII. 475—his merits as a historian, XI. 548—on the work of Ordericus Vitalis, XVI. 702.
- GUJERAT, or Guzerat, in Hindustan, XI. 91, 463—cornelian mines of, 458—marbles of, 458—culture of cotton in, VII. 447, 448; tobacco, XI. 453.
- Guldberg (O. Hoëgh), Danish author, XIX. 694.
- Guldinus, property of, XX. 150.
- GULDENSTADT (John Antony), XI. 93.
- GULES, in heraldry, XI. 93, 324.
- GULF, XI. 93; X. 483.
- GULF-STREAM, XI. 93; IV. 176; VI. 772; XIV. 652; XVII. 578.
- Gulf-weed, V. 218; XIV. 652; XVII. 578.
- GULL, XI. 93; XVI. 812.
- Gulo, genus of mammalia, XIV. 156.
- GUM, XI. 93; IX. 756; V. 73—in chemistry, VI. 516; II. 380—nutritive qualities of, VIII. 20—quantities imported, 734—specific gravity of various kinds of, XII. 88—Senegal, V. 190—Arabic, 73, 190—tragacanth, 190; XVII. 421—animi, fossil insects in, 103—ammoniac, plant producing, 421.
- of the mouth, XI. 93—period when teeth appear in, II. 831.
- GUM-RESIN, XI. 94; XIX. 88.
- Gum-trees, XVII. 626; XXI. 31; IV. 261. See Eucalyptus.
- GUMBINNE, Prussian town, XI. 94.
- GUMPELTZHAIMER (Adam), XI. 94.
- GUN, XI. 94—trade, 100—of Birmingham, IV. 732. See Artillery, Cannon, Gun-making, Gunnery, Rifle, Shooting.
- Gun-battery, IV. 510.
- Gun-boats, in royal navy, XVI. 96; XX. 137.
- GUN-COTTON, XI. 94; VI. 516—its use in blasting rocks, IV. 757—much more inflammable than gunpowder, XI. 156.
- GUN-MAKING, XI. 96—gun-trade, 100—casting of cannon, VI. 177—seasoning of gun-stocks, XX. 169.
- Gun-metal, specific gravity of, XII. 88.
- GUNDAMUK, XI. 95.
- GUNDUCK, river, XI. 95.
- GUNDWANA, in Hindustan, XI. 95.
- Gunhilda, VIII. 667.
- Gunnellus, genus of fishes, XII. 308, 310.
- Gunner, in the navy, XVI. 104.
- GUNNERY, XI. 103—in the royal navy, XVI. 108—resistance of the air to projectiles, XVIII. 67. See Projectiles.
- GUNPOWDER, XI. 150—not the invention of Roger Bacon, III. 581, *n.*; attributed to Schwartz, 581, *n.*, 636—effects of its invention on the art of war, 636, 683; VI. 624—blasting with, IV. 754—explosive force of, *ib.*; XI. 108, 109—composition of, III. 683; XI. 151—velocity of the flame of, IX. 456—magazine of, at Purfleet, VI. 351—how to enflame it by electricity, VIII. 590—specific gravity of, XII. 88, 89—charge of, for fowling-pieces, XX. 213—Count Rumford's experiments on, XXI. 229, 231—manufacture of, in Sumatra, XX. 805.
- plot, V. 383, 384.
- Gunpowder-tea, XXI. 87.
- GUNS, town in Hungary, XI. 160; XIII. 133.
- GUNTER (Edmund), mathematician, XI. 160—his line, quadrant, and scale, *ib.*; XIII. 554—on logarithms, 554—on navigation, XVI. 5.
- Gunther's homœopathic veterinary medicine, II. 358.
- GUNTOOR, in Hindustan, XI. 160.
- GUNWALE, XI. 160.
- Gurhofan, mineral, XV. 92.
- Gürické (Otto Von). See Guericke.
- Gurnards, fishes, XII. 280—as food, IX. 764.

GUR—GYM

Gurions, coast of the, IV. 745.
 GURNEY (Elizabeth), XI. 160—her exertions on behalf of prisoners, XIV. 445; XVIII. 568, 569.
 — (Thomas), his shorthand writing, XX. 675.
 — (Mr.), extracts from his Life of Dr Thomas Young, XXI. 962, 965.
 Gurungs, Nepaulese tribe, XVI. 144.
 GURWAL, in Hindustan, XI. 160.
 — British, XI. 161; XIII. 59.
 GUSTAVUS (Wasa), of Sweden, XI. 161; VII. 740; XX. 846, 847.
 — (ADOLPHUS), XI. 161; VII. 740—his army, III. 637—artillery, 684—his reign, XX. 847—killed at Lützen, 850—Hartes' life of, XI. 234.
 — III., king of Sweden, XX. 857; V. 530—his literary productions, XIX. 698—assassination of, V. 543.
 — IV., king of Sweden, XX. 859.
 GÜSTROW, in Germany, XI. 162.
 GUTENBERG (Johann), XI. 162—his claims to be regarded as the inventor of printing, X. 362; IV. 706; XVIII. 526—works executed by, 530—his connection with Fust, X. 362—his statue at Mayence, XIV. 368.
 GUTTA PERCHA, XI. 162—obtained from the Taban tree, V. 199—its use in electric telegraphs, 95, 96, 97, 113.
 — SERENA, XI. 163—in the domestic animals, XXI. 658.
 — TRAP, XI. 163.
 GUTTÆ, in architecture, XI. 163; III. 510.
 Guttenstein, triassic beds of, XV. 206.
 Gutters, in building, V. 755, 756.
 Guttes, in heraldry, XI. 330.
 Guttifera, nat. order of plants, V. 186.
 Gutting of herrings, IX. 638.
 Guttones, VI. 364; X. 726.
 GUTTURAL, XI. 163.
 GUTTY, in heraldry, XI. 163.
 GUY (Thomas), XI. 163.
 — of Lusignan, king of Jerusalem, VII. 525.
 — de Chaullac, XX. 817.
 — a rope, XI. 163.
 GUYAQUILLITE, XV. 124.
 GUY'S CLIFF, in Warwickshire, XI. 163; XXI. 737.
 — Hospital, XIII. 673; XI. 163.
 GUYON (Madame), XI. 163; I. 351, 352; IX. 506; XV. 757—Bossuet's opposition to, V. 60—her hymns, XII. 190.
 — (Mr.), XIX. 507.
 — (General), XXI. 375.
 GUYTON DE MORVEAU (Baron L. B.), XI. 164—his attempt to ground the theory of electric attraction on capillary action, I. 731—on the adhesive force of metals, II. 140—his aerial voyages, 177, 181—on capillary attraction, XII. 95—his works, XI. 166—his pyrometer, XVIII. 703.
 — (M.), on iron bridges, XII. 578.
 Guzerat, in Hindustan, XI. 463. See Gujerat.
 Gvozdieff, island, XIX. 552.
 GWALIOR, town and fortress in Hindustan, XI. 167—Sepoy insurrection at, XVI. 310.
 Gwarriahs, Indian tribe, XI. 466.
 Gweedore, in Donegal, VIII. 105.
 Gwilt, on the merits of Salisbury, and other English cathedrals, III. 448—on the absurdities of Vitruvius, 451—on the orders of architecture, 463.
 Gwynne and Co., their peat fuel, XVII. 358.
 Gyarmathi (Dr Samuel), on the affinities of the Hungarian and Finnish languages, XVII. 535.
 GYBING, XI. 168.
 GYGES, XI. 168; VI. 169; XIII. 747.
 Gyllenborg (Count), Swedish poet, XIX. 698.
 Gyllenborg (Count), V. 455.
 Gyllenbal (Leonard), his work on insects, IX. 12.
 GYMNASIUM, XI. 168—baths usually connected with, IV. 505.
 GYMNASTICS, XI. 168.

GYM—HAB

Gymnelis, genus of fishes, XII. 268.
 Gymnetis, genus of insects, IX. 127.
 Gymnetrus, genus of fishes, XII. 303.
 Gymnite, mineral, XV. 80.
 Gymnocephalus, genus of birds, XVI. 749.
 Gymnodactylus, genus of reptiles, XIX. 37.
 Gymnoderia, genus of birds, XVI. 751.
 Gymnodontel, family of fossil fishes, XII. 338.
 Gymnodonts, fishes, XII. 312, 314—fossil, 351.
 Gymnolæmata, polypes, XXI. 1002.
 Gymnomuræna, genus of fishes, XII. 232.
 Gymnopa, genus of insects, IX. 257.
 Gymnophthalmata, zoophytes, XXI. 1000.
 Gymnopleurus, genus of insects, IX. 119.
 Gymnops, genus of birds, XVI. 754.
 Gymnorhynchus, entozoa, XXI. 979.
 Gymnosoma, genus of insects, IX. 247.
 Gymnosomata, order of mollusks, XV. 362.
 Gymnosperms, V. 139—embryogeny in, 157—reign of, in geological times, 236.
 GYMNOSEPHISTS, XI. 170; V. 271.
 Gymnotidæ, family of fishes, XII. 233, 234.
 GYMNOTUS, XI. 170; VIII. 575, 580; XII. 233, 234, 226; XVII. 636—electrical organs of, VIII. 576—method of fishing for, 575.
 Gymnura, dentition of, XVI. 451.
 GYNÆCEUM, XI. 170—in botany, V. 118, 129.
 Gynandrous stamens, V. 127.
 GYONGYOS, Hungarian town, XI. 170.
 Gypsetos, genus of birds, XVI. 740.
 GYPSIES, XI. 170—the Bazeegurs of India analogous to, IV. 525—in Hungary, XII. 11—Moldavia, XV. 312—acts against, XVIII. 203—in Turkey, XXI. 378—their language, IX. 390.
 GYPSUM, XI. 172; XV. 95, 145, 148; XVII. 620—its use as a manure, II. 304, 415; VI. 524, 525—specific gravity of, XII. 88—mortar of lime and, VI. 381—enters into the composition of gauge stuff, V. 742—optical properties of, XVI. 651, 658—in Chile, VI. 548.
 Gyraacanthus, fossil fishes, XVII. 117; XII. 339.
 Gyration, radius of, XIV. 412.
 Gyrfalcon, XI. 248. See Jer-falcon.
 Gyrinus, genus of insects, IX. 101.
 Gyrocera, fossil mollusks, XVII. 112.
 Gyrodus, genus of fossil fishes, XII. 337.
 Gyrolepis, genus of fossil fishes, XII. 334.
 Gyrolite, mineral, XV. 76.
 GYROMANCY, XI. 172.
 Gyron, in heraldry, XI. 329.
 Gyronchus, genus of fossil fishes, XII. 338.
 Gyronny, in heraldry, XI. 329.
 Gyrosteus, genus of fossil fishes, XII. 337.
 GYULA, Hungarian town, XI. 172.
 Gyulai (Count), Austrian commander-in-chief, XIX. 643.

H

H, letter of the alphabet, XI. 173; II. 613—in abbreviations, 18.
 Haan (W. de), his work on insects, IX. 18.
 HAARLEM, or Haerlem, XI. 173—besieged and taken by the Spaniards, II. 643; XI. 568—population, 582—early printing at, IV. 706; XVIII. 533.
 — MEER, XI. 173—draining of, 581.
 Haarlingen, in Holland, XI. 229.
 Haase on the lymphatics and nerves, II. 703, 704.
 HABAKKUK, the prophet, XI. 174—style of, XVIII. 98.
 HABEAS CORPUS, XI. 174.
 — ACT, XI. 174; XII. 366; XVIII. 567—passing of the, V. 427—its suspension in 1794, 553; and in Ireland, 624, 634.
 HABERDASHER, XI. 175—origin of the word, IV. 660.
 HABERGEON, XI. 175.
 Habit, Malebranche on the formation of habits, I. 77—its influence on the re-

HAC—HAG

spiration of foul air, XXI. 541. See Custom.
 HACHETTE (J. Nicolas Pierre), geometer, XI. 175—on hydrodynamics, XII. 75—his experiments in hydraulics, 146.
 Hackensack river, XVI. 175.
 HACKET (John), bishop, XI. 175.
 Hackles, for artificial flies, III. 150.
 Hackling, XIX. 403; XX. 285, 511.
 HACKNEY, in Middlesex, XI. 176; XIII. 664.
 — COACHES, XI. 176; VII. 43—license to keep, XIII. 436.
 — horse, XI. 652, 662.
 Hackworth, blast-pipe invented by, XX. 682.
 Haco, king of Norway, XIX. 754.
 HACQUETON, XI. 176.
 HADDINGTON, XI. 176.
 HADDINGTONSHIRE, XI. 177—agriculture of, II. 368—fiars prices in, IX. 532—agricultural statistics, XIX. 796, 797, 798—population, 799—trigonometrical survey of, XXI. 333.
 HADDOCK, XI. 179; XII. 269—fishery, IX. 634, 647—as an article of food, 764.
 — (Sir Richard), XX. 130.
 Haddon Hall, VII. 756.
 HADELN, in Hanover, XI. 179.
 HADERSLEBEN, in Denmark, XI. 179.
 HADES, XI. 179.
 HADHRAMAUT, in Arabia, XI. 179; III. 345, 356.
 Hadjr, in Arabia, III. 341.
 HADLEIGH, town in Suffolk, XI. 179.
 HADLEY (John), XI. 179—his reflecting telescope, I. 748; II. 88—his quadrant, I. 748; XVI. 30—his sextant, XIII. 687; XVI. 28.
 — (George), on the cause of the trade-winds, XIV. 647.
 Hadow (Mr), on gun-cotton, XI. 95.
 HADRIANOPOLIS, XI. 179. See Adrianople.
 HADRIANUS (P. Olius), Roman emperor, XI. 180—Alexandria repaired by, II. 470—his wall in Britain, III. 281; V. 379; XVI. 300; XIX. 741—villa of, III. 470—mausoleum of, 473—buildings at Athens erected by, IV. 164—his visit to Egypt, VIII. 472—his passion for hunting, XII. 32—Jerusalem rebuilt and fortified by, 733, 775—circus of, VI. 734—reign of, XIX. 342—his improvements in Rome, 362—sculpture encouraged by, 858.
 HADRUMETUM, XI. 180.
 Hæl machines, XII. 75, 173.
 Hæmatine and Hæmatosine, II. 780.
 Hæmatite, XV. 108; XII. 540; VI. 184.
 Hæmatopota, genus of insects, IX. 231.
 Hæmatopus, genus of birds, XVI. 797.
 Hæmaturia, among cattle, XXI. 570.
 Hæmocharis, genus of annelides, XI. 307.
 Hæmodoraceæ, nat. order of plants, V. 212.
 Hæmopis, genus of annelides, XI. 306.
 HÆMOPTYSIS, XI. 180.
 HÆMORRHAGE, XI. 180; XVII. 690—surgical treatment of, XX. 821.
 Hæmulon, genus of fishes, XII. 285.
 HÆMUS, mountains, XI. 180; IV. 396.
 Hænke (Thadæus), on the vegetable productions of Peru, XVII. 472.
 HÆRETICO COMBURENDO, XI. 180, 351.
 HAERLEBEKE, town of Belgium, XI. 180.
 Haerlem. See Haarlem.
 HAF, lagoon near Stettin, XI. 180.
 HAFIZ (S. Eddin Mohammed), Persian poet, XI. 180; XVII. 429—his tomb at Shiraz, XX. 206.
 Hafnefordite, mineral, XV. 71.
 HAGARENES, XI. 181; III. 361.
 Hagecius ab Hayck (Thadæus), on brewing, V. 319.
 HAGEN, town of Prussia, XI. 181.
 Hagenbach (J. J.), his works on insects, IX. 13.
 HAGERSTOWN, in Maryland, XI. 181; XIV. 331.
 HAGGAI, the prophet, XI. 181.
 HAGIOGRAPHIA, XI. 181; IV. 695, 697; XIX. 833.
 HAGUE (The), XI. 181—royal library at,

HAG—HAL

XIII. 422—political riots in 1785, V. 525—collection of paintings at, XI. 591—population, 582—meeting of the states-general at, in 1830, IV. 605.
 HAGUENAU, French town, XI. 181.
 Hahn (C. W.), his works on insects, IX. 18.
 HAHNEMANN (Samuel), founder of homoeopathy, XI. 181, 606 *et seq.*
 HAICTITES, Mussulman sect, XI. 181.
 Haidinger (M.), on optics, XVI. 550, 667, 669, 676.
 Haidingerite, mineral, XV. 96.
 HAIL, XI. 181; XIV. 658—hail protectors, I. 737; VIII. 586—great hail storm in France, X. 48—electrical origin of, VIII. 586—laws regulating the distribution of, XVII. 613.
 Hailes (Lord). See Dalrymple (Sir D.).
 HAILSHAM, in Sussex, XI. 181.
 HAINAN, island, XI. 181—fossil crabs of, XVII. 102.
 HAINAULT, in Belgium, XI. 182; IV. 601, 613, 615—tobacco and chicory grown in, 624.
 — forest, IX. 336, 337.
 — scythe, II. 313.
 HAINBURG, town of Austria, XI. 182.
 HAINICHEN, town in Saxony, XI. 182.
 HAIR, XI. 182; XVII. 667—structure of human, II. 837—best kinds of, for fishing-lines, III. 151—as manure, II. 407—of the mammalia, XIV. 133, 212—imports of, VIII. 734—of the Rocky Mountain goat, XXI. 906.
 — cloth, XI. 183.
 — or down, of plants, XI. 183; V. 75.
 — manufactures, XI. 183.
 — POWDER, XI. 183.
 — salt, XV. 97.
 Hair-ball, disease of cattle, XXI. 568.
 Hair-eel, XI. 307.
 Hair-trigger, XI. 99.
 HAKE, fish, XI. 183; XII. 269—fishing, IX. 648, 634—as food, 764—cured, 646.
 Hakewill (Dr George), his work on the Power and Providence of God in the Government of the World, I. 240.
 HAKIM, or El-Hakim, worshipped by the Druses, XX. 908; VIII. 478.
 HAKLUYT (Richard), XI. 183—his Collection of Voyages, IV. 707, n. 2—treatise on the north-west passage in, XVIII. 164—on the gold and silver of California, VI. 97—on the use of horse and camel's dung as fuel, X. 318, n. 1.
 HAL, town of Belgium, XI. 184.
 Haladroma, genus of birds, XVI. 812.
 HALAS, town of Hungary, XI. 184.
 HALBERSTADT, Prussian town, XI. 184.
 HALBERT, or Halberd, XI. 184.
 Halbesk (Dr), on leprosy, XIII. 340.
 HALCYON, XI. 184.
 — DAYS, XI. 184.
 Halcyornis, genus of fossil birds, XVII. 155.
 HALDANE (James Alexander), XI. 185.
 — (ROBERT), XI. 184.
 Haldat (M.), of Nancy, on magnetism, XIV. 13, 33—his magnetic figures, 25.
 HALDE (Jean Baptiste du), XI. 185.
 HALE (Sir Mathew), XI. 185—on the foundation of the authority of laws, VI. 190—on the law regarding fishing in England, IX. 602—on mercy to animals, XI. 663.
 — (Mr), his improvement on rockets, XI. 142.
 Halec, genus of fossil fishes, XII. 347.
 Halecoidei, family of fossil fishes, XII. 347.
 HALES (Stephen), D.D., physiologist, XI. 187—on the physiology of leaves, V. 101, 104—instrument used by, to ascertain the force of the ascent of sap in trees, 112—on respired air, XVIII. 73.
 — of Eaton, Lord Hailes' edition of his works, VII. 635.
 HALESOWEN, town in Worcester, XI. 187.
 HALESWORTH, town in Suffolk, XI. 187.
 HALF-PAY, XI. 187; VII. 202, 203—in the navy, XVI. 113.
 Halfpenny, VII. 70.

HAL—HAL

- Halhed (Mr), on the Sanscrit language, XVII. 529.
- Haliætus, genus of birds, XVI. 742.
- HALIBUT, or Holibut, fish, XI. 187; XII. 271—as an article of food, IX. 764—fishery of, 634, 648—in Lapland, XIII. 241.
- Halicampus, genus of fishes, XII. 315.
- HALICARNASSUS, XI. 187—sepulchre of Mausolus at, XIV. 366.
- Halicore, genus of mammalia, XIV. 218. See Dugong.
- Halictus, genus of insects, IX. 198.
- Haliday (W. H.), on the destruction of salmon ova by trout, IX. 617.
- (A. H.), his writings on insects, IX. 18.
- Haliotea, genus of fishes, XII. 312.
- HALIOTICS, XI. 188.
- HALIFAX, in Yorkshire, XI. 188; XXI. 959—woollen manufactures of, 916, 918.—in Nova Scotia, XI. 188; XVI. 343, 345.
- (John of), III. 581, 796; X. 504.
- (MARQUIS OF), XI. 189. See Savile.
- HALIMASS, XI. 189, 196.
- Haliotidae, family of mollusks, XV. 380.
- Haliotis, genus of mollusks, XV. 380—fossil, XVII. 111.
- Halithea, genus of annelides, XI. 300.
- Halitherium, fossil mammal, XVII. 166.
- HALL, (Capt. Basil), XI. 189—his barometrical observations, IV. 458—on the falls of Niagara, VI. 136—on the vegetation of Concepcion, II. 671—camera lucida employed by, VI. 118—his pendulum observations, IX. 572, 573.
- (C. M.), his achromatic telescope, XVI. 534.
- (EDWARD), XI. 189—his chronicle on masquerades, XIV. 339.
- (Sir James), of Dunglast, XI. 189—on the striated surfaces of rocks, VII. 723.
- (John), his improvement in ropemaking, XIX. 410.
- (JOSEPH), bishop, XI. 189.
- ROBERT, XI. 190—his objections to Edwards' theory on the principle of virtue, XV. 561—on the theory which places all virtue in universal benevolence, 563—his intimacy with Sir J. Mackintosh, XIII. 785.
- (Dr Marshall), on the capillary vessels, II. 797—on the nerves, 815—on the action of the brain, XVII. 561—on the spinal cord, 674—his discoveries in relation to the nerves, 676.
- (Mr), his apparatus for singeing cloth, IV. 764.
- (Mr), on the aborigines of Tasmania, XXI. 31.
- in architecture, &c., XI. 189.
- in Würtemberg, XI. 189.
- town in the Tyrol, XI. 189.
- Hall's condensers, XX. 654.
- Hallam (Henry), on the study of the canon and civil law, VI. 737—on the feudal system, IX. 521, 525—on Harrington, XI. 232—on Hooker, 621—on the English constitution, VIII. 759 *et seq.*—his criticism on St Evremont, IX. 422—on the Orlando Furioso, XVIII. 111—on the sermons of Jeremy Taylor, XXI. 78—on Da Vinci, 591.
- HALLE, Prussian city, XI. 195—university of, XVIII. 673; XXI. 492.
- (John), his anatomical work, II. 760.
- HALLEIN, Austrian town, XI. 195.
- HALLELUJAH, XI. 195; II. 589.
- HALLER (Albert von), XI. 195; XIV. 462—his anatomical and physiological labours, II. 765, 766—on fat, 788—on the arteries, 791, 792, 796—on the veins, 793, 795—on the spongy body of the urethra, 779—on exhalants, 802—on the lymphatics, 804—on the nerves, 814—on the mucous membrane, 836—on the serous membrane, 839—on the weight of the brain, III. 82—his discoveries relating to the muscles and nerves, XVII. 676—on monsters, XV. 503—on surgery, XX. 820.

HAL—HAM

- HALLEY (Dr Edmund), XI. 196—on the proper motion of the stars, I. 845—his hypothesis regarding magnetic poles, 990—physics greatly indebted to him, 658—his voyages for scientific purposes, 658, 659, 742—on the trade-winds and monsoons, 659—on the variation of the compass, *ib.*—his life, works, and character, 697, *n.* 3—on terrestrial magnetism, 741; and declination of the needle, *ib.*, 990—on probabilities of life, III. 220, 230; XII. 396—his discovery of the law that connects the height of the atmosphere with its density, IV. 463; I. 729—his edition of Apollonius, VII. 250; X. 503—his astronomical labours, I. 658; III. 804—his comet, IV. 76, 94—constellations added by, 80—on aurora borealis, 243, 246—on the barometer, 459—on barometrical measurements, I. 729; IV. 463—his improvement of the diving-bell, VIII. 61, 62—on evaporation, IX. 407, 409; I. 659—on projectiles, XI. 107—on magnetism, XIV. 3, 49—on mortality, XV. 601, 631—on the origin of springs, I. 659—on navigation, XVI. 6—pneumatics, XVIII. 57—on the thermometer, XXI. 221.
- Halliwell (Mr), on Shakspeare, XX. 89.
- Hallman (C.), Swedish author, XIX. 699.
- Hallomenus, genus of insects, IX. 132.
- Hallooing, in hunting, XII. 46.
- HALLOWELL, village in Maine, XI. 196.
- HALLOWMAS, XI. 196.
- Halloysite, mineral, XV. 83.
- Halls in universities, XXI. 454 *et seq.*
- Hallstatt, triassic rocks of, XV. 206.
- Halmahera, island, X. 627.
- HALMOTE, XI. 196.
- HALMSTAD, in Sweden, XI. 196; XX. 864.
- HALO, XI. 196; VII. 410; XIV. 681; XVI. 688—artificial, *ib.*—polarisation of the light of, 689—colours of, VI. 645, 651. See Corona.
- Haloid stones, XV. 73.
- Haloragaceæ, nat. order of plants, V. 192.
- Halotrichite, mineral, XV. 97.
- HALSTEAD, town in Essex, XI. 196.
- HALTERES, ancient exercises, XI. 196.
- in flies, IX. 42, 41, *n.* 2.
- HALTWHISTLE, in Northumberland, XI. 196.
- Haly Abbas, XIV. 456.
- HALYS, river, XI. 197.
- Halysites, fossil coral, XVII. 97.
- HALYWERFOLK, XI. 197.
- HAM, son of Noah, XI. 197; VIII. 45.
- the land of Egypt, XI. 197; VIII. 419.
- XI. 197.
- town of France, XI. 197.
- thigh of a beast, XI. 197; VIII. 734.
- Hamadah, table-land in Africa, II. 212.
- HAMADAN, XI. 197; VIII. 370.
- HAMADRYADES, XI. 197; VIII. 201.
- HAMAH, city of Syria, XI. 197; XX. 902, 904—plain of, 903.
- Hamamelidaceæ, nat. order of plants, V. 195.
- Hamath. See Hamah.
- HAMAXOBII, XI. 197.
- HAMBATO, town in Ecuador, XI. 197.
- HAMBURG, XI. 197—Jews in, XII. 783—commerce of, VII. 187—corn trade, 403—member of the Hanseatic League, XI. 213—libraries at, XIII. 421—bank of, XV. 489—rules for gas-fitters in, XIX. 616—rate of interest at, XII. 431—lottery, XIII. 697—bills of mortality, XV. 623—postal system, XVIII. 424—coins, XV. 441, 443—weights and measures, XXI. 811.
- white, XIII. 302.
- HAMEL (Jean Baptiste du), XI. 199. See Duhamel.
- (de V. le M. H. L.) See Duhamel.
- (Dr), his ascent of Mont Blanc, II. 627.
- HAMELN, town of Hanover, XI. 199.
- HAMESECKEN, or Hamesucken, XI. 199.
- HAMILCAR BARCA, XI. 199; II. 717; VI. 281, 290 *et seq.*—son of Gisco, 284.

HAM—HAM

- Hamlico, VI. 283.
- Hamilton (Alexander), American statesman, XXI. 437, 438, 756, 757, 760.
- (ANTHONY, COUNT), XI. 199.
- (Lord Archibald), his measures for parliamentary reform, V. 632, 635, 637.
- (Captain), his Cyril Thornton, XIX. 282.
- (ELIZABETH), XI. 200.
- (GAVIN), painter, XI. 200.
- (Gavin), patron of Burns, VI. 18.
- (Lady), XI. 201; XVI. 135, 136, 139 *n.*
- (Lord), his bequest to Glasgow University, XXI. 476.
- (Marquis of), in Charles the First's reign, V. 395—his assistance to the Swedes with British forces, XX. 849.
- on the climate of Ireland, XII. 504.
- on the Turks in Syria, XX. 909.
- (Patrick), XIX. 772.
- (Dr ROBERT), XI. 200—on the national debt, X. 328 *et seq.*; V. 600—on the sinking fund, VIII. 753—on capillary attraction, XII. 91—on taxation, XXI. 39, 70.
- (Sir W. Rowan), I. 918—on conical refraction in biaxial crystals, *ib.*; XVI. 548, 656—his peculiar analysis in geometrical optics, I. 918—a discoverer in pure analysis and its connection with geometry, *ib.* *n.* 2.
- (Sir WILLIAM), diplomatist, XI. 201—his account of Mount Etna, II. 190, 196.
- (Sir William), Professor of Logic at Edinburgh, Coleridge accused of plagiarism by, VII. 111—his erudition and historical cast of mind, XI. 546—on thinking, XIII. 568, *n.*—his definition of logic, 571, *n.*—his works on logic, 576, *n.*—on logic, 582, 583 *et seq.*—his partial negatives, 588—on metaphysics, XIV. 555—on sensation and perception, 563—on the primary and secondary qualities of body, 570, 571—on the classification of mental phenomena, 578, *n.* 1 and 2—on association of ideas, 594, 595—on causal judgment, 601, *n.* 3—his criticism on Schelling, 608, *n.* 2—on the terms subject and subjective, XVI. 401—on the senses of taste and smell, XIV. 563, *n.* 4—on the muscular sense, 569, *n.* 8—his discussions on education, XXI. 443, *n.* 2.
- (WILLIAM), of Bangour, XI. 201.
- (William), on Egyptian architecture and antiquities, III. 435—Greek inscription published by, XI. 384.
- town in Lanarkshire, XI. 199.
- town in Upper Canada, XI. 199; VI. 135, 144, 152.
- Hamites, genus of mollusks, XV. 394—fossil, XVII. 113.
- HAMLET, XI. 201.
- prince of Denmark, XI. 201.
- HAMM, in Westphalia, XI. 201.
- Hammarsköld, Swedish author, XIX. 700.
- HAMME, town of Belgium, XI. 201.
- Hammel (A. D.), his works on insects, IX. 13.
- HAMMER, XI. 201—steam-hammer, XII. 563.
- Hammer-beam roof, XIX. 392.
- Hammer-headed sharks, XII. 320, 322.
- HAMMERFAST, town in Norway, XI. 201; XIII. 243.
- HAMMERSMITH, XI. 201.
- HAMMOCK, XI. 202.
- HAMMOND (Henry), XI. 202.
- (JAMES), poet, XI. 202.
- Hamoaze, V. 307, 309; VIII. 84; XVIII. 17.
- Hampden (Bishop), on moral philosophy, XV. 536, 537.
- (JOHN), XI. 202; VII. 509; V. 394; XXI. 688, 689.
- HAMPSHIRE, XI. 202—its breed of pigs, II. 355—basin, XV. 211, 212—population and value of property, VIII. 754.
- (New), in United States, XXI. 419. See New Hampshire.
- HAMPSTEAD, in Middlesex, XI. 205.

HAM—HAP

- HAMPTON, in Middlesex, XI. 205.
- Court Palace, XI. 205—Raphael's cartoons at, VI. 304—Thornhill's paintings at, XXI. 237—King Charles' elm at, 274.
- HAMSTER, XI. 205; XIV. 182—its hybernation, III. 180—its fur, X. 348.
- HANAPER, XI. 205—clerk of, VI. 764.
- HANAU, in Hesse-Cassel, XI. 205, 362—battle of, X. 165.
- HANCES, in architecture, XI. 205.
- Hancock, in Maryland, XIV. 330.
- (Mr), his work on the mollusca, XV. 327—on the mollusca, 337.
- HAND, XI. 205; XIV. 134—bones of, III. 33—muscles, 38—motions of, 40.
- a measure, XI. 205—imposition of hands, *ib.*
- Hand-in-hand fire office, XII. 417.
- Hand-loom, XXI. 783.
- HANDEL (George Frederic), XI. 205; XV. 715.
- Handkerchiefs, folding of, VI. 93.
- Handley (Mr), his account of an agricultural meeting at Mecklenburg, II. 253.
- Handson (Raphé), on navigation, XVI. 5.
- HANDSPIKE, XI. 207.
- HANG-CHAU-FOU, Chinese city, XI. 207.
- Hanging, death from, XIV. 430—as a capital punishment, 445.
- HANGO-HEAD, promontory on the Gulf of Finland, XI. 207—English boat, under a flag of truce, captured near, XIX. 511.
- HANLEY, town in Stafford, XI. 207.
- HANNIBAL, XI. 208—his army, III. 629—invasion of Sicily, VI. 281—war with the Romans, 293; XIX. 310—passage of the Alps, VI. 293 and *n.*; II. 623—his proceedings in Africa, 298—his defeat at Zama, 299—character of, 296; death, XIX. 314—Saguntum taken by, XX. 457—Whitaker on his passage over the Alps, XXI. 851.
- HANNO, Carthaginian navigator, XI. 210—Periplus or voyage of, II. 209; X. 461—translation of his Periplus by Campomanes, VI. 130.
- Carthaginian general, XI. 210; VI. 286 *et seq.*
- HANOVER, XI. 210—army of, III. 652—conquered by the French, V. 464—seized and plundered by the French, 596—monarchy, XV. 413—coins of, 442, 443—crown of, XI. 335—postal system, XVIII. 424—university in, XXI. 492—weights and measures, 811.
- city, XI. 213.
- in Indiana, XII. 375.
- village in Hampshire, North America, XI. 213.
- Hanse Towns, or Hansards, XI. 214; VII. 739; XVI. 2—their commerce, VII. 187—their contentions with Denmark, 739—French trade with, X. 259.
- HANSEATIC LEAGUE, XI. 213; X. 303. See Hanse Towns.
- Hansen (M.), on perturbations, I. 826—on the perturbations of the smaller planets IV. 91—his discovery of two new lunar inequalities, I. 826; IV. 88—on the moon's figure, I. 813, *n.* 3—his other investigations, 827—on the pendulum, 855.
- Hansteen (Prof. Christopher), I. 990—his Dissertation on the earth's magnetism, *ib.*—on magnetic variation or declination, *ib.*—position of magnetic centres or poles, *ib.* 991—on the lines of dip, *ib.*—on aurora borealis, IV. 249—his further researches on magnetism, XIV. 7, 8, 15, 23, 42, 49, 55, 57, 58, 59 *et seq.*—his four magnetic poles, 50—his magnetic observations in Siberia, I. 991; XIV. 60—on the causes of the earth's magnetism, 64.
- HANSEY, town of Hindustan, XI. 215—sepooy insurrection at, XVI. 309.
- HANWAY (Jonas), XI. 215—on the evils of tea-drinking, XXI. 83.
- Hanwell, lunatic asylum, XIV. 528.
- Haplacanthus, genus of fossil fishes, XVII. 117.
- Happiness, XV. 572—Aristotle on, III. 557, 561—Socrates on, XX. 396.

INDEX.

HAP—HAR

Hapsburg dynasty, IV. 302.
 Har, Egyptian deity, VIII. 438.
 Har-*oër* or Aroëris, Egyptian deity, VIII. 438.
 Harbours, XI. 216; XVII. 585—harbour of refuge at Portland, XVIII. 273—in the Firth of Forth, IX. 795—of Jamaica, XII. 680—at Peterhead, XVII. 485—English, VIII. 721—French, X. 243—Irish, XII. 505. See Docks, Ports.
 Harbs, Arabian tribe, III. 348.
 Harburg, in Hanover, XI. 226.
 Harbutt (Rev. William), on a marine worm, XI. 297, n. 3.
 Harclay (Sir Andrew), VI. 623; VII. 699.
 Harde, gland of, III. 97.
 HARDEWIJK, town in Holland, XI. 226.
 HARDICANUTE, XI. 226—reign of, VIII. 662—shipping in the time of, XX. 119.
 Hardie (Thomas), V. 553, 554.
 — (Walter), his reflecting stereoscope, XX. 688.
 Harding (M.), his discovery of the planet Juno, I. 835; IV. 68—on Mercury and Jupiter, 65, 71.
 Harding's diary, VII. 625.
 Hardinge (Sir Henry), V. 669, 670—his engagement at Ferozeshah, IX. 518—his account of the death of Sir J. Moore, XV. 529.
 HARDNESS, XI. 226—of minerals, XV. 55; XIII. 231.
 HARDOUIN (Jean), Jesuit, XI. 226.
 Hardware-manufacture of Birmingham, IV. 731—of England, VIII. 729; France, X. 254; Spain, XX. 490; Staffordshire, 530. See Cutlery, Iron Manufacture, &c.
 Hardwick, seat of Duke of Devonshire, VII. 756.
 HARDWICKE, earl of, XI. 226. See Yorke (Sir Philip).
 Hardy (Captain), XVI. 138, 139.
 — (Sir Charles), V. 488.
 — (James), his contributions to entomology, IX. 22.
 — (Sir Thomas), on capstans, XX. 23.
 Hardy's escapement, VII. 13.
 HARE, XI. 226; XIV. 187; XXI. 548—as food, IX. 762—teeth of, XVI. 454, 455—hare skins, X. 349, 350—of Java, XII. 704—hare hunting, 41—shooting of, XX. 222.
 — (JULIUS CHARLES), XI. 226—his vindication of Luther, XIII. 739—his Life of Sterling, XX. 692.
 — (Dr Robert), of Philadelphia, his electrical machine, VIII. 538, 604—his single-leaf electrometer, 619; his galvanic deflagrator, XXI. 612; its results, 626—his calorimeter, 616.
 Harebell, order of plants, V. 197—the harebell, 123.
 Haredwara, in Hindustan, XII. 49.
 Harelip, surgical treatment of, XX. 835.
 HAREM, XI. 228; VII. 302; XXI. 379.
 Har-em-heb, Egyptian king, VIII. 461.
 Harengula, genus of fishes, XII. 237.
 Harfang, bird, XVI. 746.
 HARFLEUR, French town, XI. 228.
 Harford's notice of Wharton, XXI. 734.
 Hargraves (Edward Hammond), his discovery of gold in New South Wales, IV. 275.
 Hargreaves, or Hargraves (J.), his spinning jenny, III. 609; XX. 510—carding machine and spinning jenny, VII. 441.
 HARIHARA, in Hindustan, XI. 228.
 HARRINGTON (Sir John), poet, XI. 228.
 Harlan (Dr), on a fossil whale, XVII. 166.
 Harland (Sir Robert), V. 485, 486.
 Harleian MSS., XI. 229; XIII. 391.
 HARLEQUIN, XI. 228; VIII. 148.
 HARLEY (Robert), earl of Oxford, XI. 229; III. 217—his kindness to Defoe, VII. 695—his friendship with Swift, XX. 873.
 HARLINGEN, in Holland, XI. 229; XX. 271; XXI. 543.
 HARMODIUS, XI. 229; III. 532; IV. 197.
 HARMONIA, XI. 229; VI. 51.
 HARMONICA, musical instrument, XI. 230; XV. 713, 714.

HAR—HAR

Harmonical progression, XVIII. 639.
 HARMONICS, XI. 230; II. 107.
 — acute, XI. 230; II. 110; XV. 701.
 HARMONIUM, musical instrument, XI. 230.
 HARMONY, in music, XI. 230; II. 110;
 XV. 719—theories of, 701—in architecture, III. 484.
 — Hall, socialist establishment, VII. 216.
 HARMOSTÆ, XI. 230.
 Harmotome, mineral, XV. 77.
 Harmouth, fish, XII. 260.
 Harness, exports of, from Britain, XIII. 311.
 HARO, town of Spain, XI. 230.
 HAROLD I., king of England, XI. 230; VIII. 662.
 — II., king of England, XI. 230; VIII. 663, 664—killed in the battle of Hastings, 665.
 — Hardrada, king of Norway, VIII. 663.
 — Harfagr, king of Norway, XVI. 316, 317 and n. 1; XII. 197.
 Haroun-al-Raschid, II. 4, 13. See Aaron-al-Raschid and Harun-al-Raschid.
 HARP, XI. 230.
 Harp-shells, XV. 386.
 Harpa, genus of mollusks, XV. 386.
 Harpagifer, genus of fishes, XII. 307.
 HARPAGINES, XI. 230.
 Harpagus, VII. 612; XIII. 748.
 Harpalici, insects, IX. 88—synoptical table of, ib.
 Harpalus, genus of insects, IX. 88.
 HARPE (Jean François de la), XI. 230—his eulogy of Condillac, I. 116, n.—his definition of Reflection, and on the moral tendency of the French school of metaphysics, ib.—his character of Aguesseau, II. 425—Voltaire's letter to, XXI. 667.
 HARPER'S FERRY, village in Virginia, North America, XI. 231.
 Harpi-chruti, Egyptian deity, VIII. 439.
 Harpies, birds, XVI. 743.
 HARPINGS in a ship, XI. 231.
 HARPOCRATES, Egyptian deity, XI. 231; VIII. 439.
 HARPOCRATION (Valerius), grammarian, XI. 231.
 HARPONULLY, in India, XI. 231.
 HARPOON, XI. 231.
 HARPSICHOORD, XI. 231; XVII. 704.
 Harpyia, genus of birds, XVI. 743.
 HARPYIÆ, or Harpies, XI. 231.
 HARQUEBUSS, XI. 232.
 Harrar, African town, XII. 50.
 HARRIER, XI. 232, 770; XII. 41—packs of in Britain, 39.
 — bird, XVI. 744.
 Harrid (Messrs), their composition rollers, XVIII. 549.
 HARRINGTON, in Cumberland, XI. 232.
 — (JAMES), XI. 232—merits of his Oceana, I. 47 n.
 Harringtonite, mineral, XV. 75.
 HARRIOT (Thomas), XI. 232; XIV. 742—his improvements in algebra, I. 559; II. 485—observed the spots of the sun not more than a month later than Galileo, I. 559—on equations, IX. 284, 299—telescopes used by, XVI. 528.
 Harris (A. C.), on Egypt, VIII. 421—his discovery of an oration of Hyperides, XII. 192.
 — (General), V. 567; XXI. 818.
 — (Howel), of Trevecca, XIV. 693.
 — (JAMES), XI. 233—on grammar, X. 754 *et seq.*—on money, XVIII. 220.
 — (Moses), his works on insects, IX. 7.
 — (Mr), on pictures seen by each eye separately, XX. 684.
 — (T. W.), his works on insects, IX. 22.
 — (W. C.), on elephant-shooting, XX. 211.
 — (Sir Wm. Snow), on electricity, VIII. 534—on the influence of heat in promoting conduction, 540, 541—on the attraction of spheres and planes, 550—on the evolution of heat by electricity, 590, 591—his electrical machine, 604—

HAR—HAR

his ship-conductors, 610; XX. 24—his electroscopes and electrometer, VIII. 620—his measuring electrometer, 622—his bifilar balance, 623—his electrical balance, 624—on magnetism, XIV. 13, 20, 23, 24, 35, 67—his compass, 80—his magnetometer, 83—his experiments in voltaic electricity, XXI. 627.
 HARRIS, in the Hebrides, XI. 233; XIII. 351.
 — SOUND OF, XI. 233.
 HARRISBURG, in Pennsylvania, XI. 233—geology, XVII. 395—railway at, 397.
 HARRISON (John), XI. 233—his escapement, VII. 8—his going ratchet, 14—obtained the first Government reward for chronometers, 8; XIII. 686—his compensation balance, VII. 29.
 — (Mr), of Blackburn, his power-looms, XXI. 789.
 HARROGATE, in Yorkshire, XI. 234—its mineral waters, XV. 37.
 HARROW, agricultural implement, XI. 234; II. 272, 273.
 HARROW-ON-THE-HILL, in Middlesex, XI. 234.
 HARRY, BLIND, or Harry the minstrel, XI. 234.
 HART, XI. 234. See Deer.
 — (Mr), of Glasgow, his galvanic battery, XXI. 611.
 HARTE (Walter), historian, XI. 234.
 HARTFORD, in Connecticut, North America, XI. 234—Trinity College at, VII. 295—asylum for the insane, also for the deaf and dumb at, VI. 295.
 Hartine, mineral, XV. 124.
 Hartite, mineral, XV. 125.
 HARTLAND, town in Devon, XI. 234.
 HARTLEPOOL, town in Durham, XI. 234—docks and harbour of, VIII. 75, 266—chalybeate spring at, ib.—romantic rocks near, 267.
 HARTLEY, in Northumberland, XI. 235.
 — (DAVID), XI. 235—on the origin of our ideas, I. 115, n.—his Theory of Human Nature, 170, 171—his Observations on Man, 378 *et seq.*, 386—on associations of ideas, 170, 379, 381; XIV. 596—his merits as a metaphysician, I. 381—his vibratory theory of sensations, XVIII. 68.
 — (Messrs), their manufacture of sheet-glass, X. 664.
 — Institution, XX. 452.
 Hartlib, on agriculture, II. 257.
 Hartmann (Prof.), his edition of Edrisi's geography, VIII. 412.
 Hartog (Dirk), his voyage, IV. 252.
 HARTSHORN, spirit of, XI. 235.
 Hartz Mountains. See Harz Mountains.
 HARUN AL RASCHID, caliph of Bagdad, XI. 235—Bagdad improved by, IV. 363—his residence at Derbend, VII. 753—his love of science, XIV. 456—tomb of, 546—Arabic learning under, XVII. 521—his patronage of medicine, XX. 814.
 HARUSPICES, XI. 235; III. 720.
 Harvard University, V. 62; XIV. 340; XXI. 423—library, XIII. 429; XIV. 340.
 HARVEST, XI. 236—period of, in different countries, V. 221; XVII. 625; in France, X. 241.
 — cart, II. 279.
 Harvest-bug, III. 339.
 Harvest-moon, IV. 34.
 Harvesting implements, II. 276.
 Harvey and Co., their pumping-engines, XX. 614.
 — (Gabriel), XI. 363; XV. 800.
 — (Major), on the Belgian army, III. 654.
 — (Dr WILLIAM), XI. 236; XIV. 460—his discovery of the circulation of the blood, II. 761; importance of that discovery, XX. 818.
 HARWICH, town in Essex, XI. 237; IX. 337.
 Harwood (Dr), on editions of the ancient classics, IV. 711.
 HARZ, or HARTZ MOUNTAINS, XI. 237, 211

HAR—HAU

—employments of the inhabitants of, 212.
 HARZGERODE, town in Germany, XI. 237.
 Hasan Sabah, XVII. 437.
 Hasbelya, in Palestine, XVII. 185.
 Hase (Dr), on theology, XXI. 212.
 Hasheesh, VIII. 431, 448. See Hemp.
 Haskin's quicksilver pump, XVIII. 84.
 Haslam (Dr), his definition of insanity, XIV. 526.
 Haslar Hospital, VIII. 84—Parry's superintendence of, XVII. 308.
 HASLEMERE, town in Surrey, XI. 237.
 HASLINGDEN, town in Lancashire, XI. 237.
 Hassa (el), or Bahrein, in Arabia, III. 343.
 Hassall (Dr Arthur Hill), his work on microscopic anatomy, II. 770—on adulterations of food, IX. 769, 700—of tea, XXI. 87.
 Hassan Aga, II. 568.
 — Caliph, anecdote of, II. 455.
 HASSELQUIST (Frederic), Swedish naturalist, XI. 238.
 HASSELT, town of Belgium, XI. 238.
 Hassenfratz (M.), on the speaking-trumpet, II. 107.
 HASTA, or hasta pura, XI. 238.
 HASTATI, XI. 238; III. 630, 631.
 Hastenbach, battle of, V. 464.
 Hastings, a Calcutta-built frigate, XXI. 277.
 — (Marquis of), his administration in India, XI. 506—on the zemindars of Bengal, IV. 650—abolition of the censorship by, XVI. 203.
 — (WARREN), XI. 238, 490, 494 *et seq.*—his proceedings in Oude, XVII. 21—charges against, V. 509, 520—his impeachment, 520, 524—trial of, 519, 523, 534, 539, 556, 777—considerations regarding his conduct in India, 524—his acquittal, 556.
 — town in Sussex, XI. 238; XX. 838, 839—battle of, VIII. 665; XX. 840—sand rocks of, XV. 209—singular case of atmospheric refraction at, IX. 490.
 HAT, XI. 240—manufacture of, in Paris, X. 256—at Oldham, XVI. 506—use of oak bark in dyeing, VIII. 304, n. 3—straw hats, XI. 242.
 HAT-MAKING, XI. 240—in England, VIII. 732—in France, X. 256.
 HATCH, in mining, XI. 243.
 — in a ship, XI. 243.
 HATCHEL, XI. 243.
 Hatchet (Mr), on magnetism, XIV. 27.
 Hatchetine, XV. 124.
 Hatching, in engraving, VIII. 805.
 — of eggs, artificial, XVIII. 815.
 HATCHMENT, in heraldry, XI. 243, 340.
 HATCHWAX, XI. 243.
 HATFIELD, town in Hertfordshire, XI. 243.
 — house, XI. 243.
 Hatsell, on parliamentary forms of procedure, XVII. 297, 299.
 HATHERLEIGH, town in Devon, XI. 243.
 HATRAS, town in Hindustan, XI. 244.
 HATTEMISTS, Dutch sect, XI. 244.
 HAUBERK, XI. 244.
 Hauch (J. Carstens), Danish author, XIX. 695.
 Hauerte, mineral, XV. 121.
 Haughton (Prof.), on the granites of Ireland, XV. 136, n.—on other Irish rocks, 137, 138—on faults in rocks, 176—on cleavage, 179—on granite veins, 186.
 HAUKEBEE, or Hawksbee (Francis), XI. 244; I. 733 and n.—on the luminous barometer, IV. 455—his barometrical experiment, 459—his contributions to electricity, VIII. 524—on capillary attraction, XII. 93, 96—on magnetism, XIV. 4—his air-pump, XVIII. 34.
 HAUNCH, XI. 244.
 Haurân, mountains, XVII. 187; XX. 902—province, 910.
 HAURIANT, in heraldry, XI. 244.
 Hausset (Madame du), on the character of Quesnay, XVIII. 733.
 Haussman on voltaic electricity, XXI. 619.
 Haussmann on dyeing blue, VIII. 304.
 Hausmannite, mineral, XV. 111.
 HAUTOY, wind instrument, XI. 244. See Oboe.

HAU—HAY

- HAYR (Réné Just), XI. 244—on capillary attraction, XII. 91, 96—on crystallization, VII. 546, 548, 551—on the pyro-electricity of minerals, VIII. 529—on the electricity of minerals, 538, 559, 562 *et seq.*—his electroscopes, 558—on double magnetism, XIV. 7.
— (Valentine), his invention of printing for the blind, XVIII. 553.
HAYNE, mineral, XV. 74.
HAVANA, in Cuba, XI. 244; VII. 565, 567; XXI. 837—sugar, XX. 796—tobacco, XXI. 294, 295.
HAVANT, in Hants, XI. 244.
HAVE (La), river in Nova Scotia, XVI. 343.
HAVER, river, XI. 244.
Havelock (General), XVI. 306—his relief of Lucknow, and death, 308.
Haven, X. 483.
HAVERCAMP (Sigibert), XI. 245.
HAVERFORDWEST, in Pembrokeshire, XI. 245; XVII. 374.
HAVERHILL, town in Suffolk, XI. 245.
— village in Massachusetts, XI. 245.
HÄVERNICK, on the Old Testament, IV. 696.
HAVRE (le), or Havre de Grace, seaport in France, XI. 245—population, X. 277.
HAW, XI. 246.
HAWAII, XI. 246; XVIII. 270.
HAWARDEN, in Flintshire, XI. 246—fire-brick clay found at, V. 346.
HAWASH, river, XI. 246; II. 55.
HAWES (Stephen), XI. 246.
HAWFINCH, XVI. 761.
HAWICK, Scotch town, XI. 246; XIX. 452, 453—Gavin Douglas, rector of, VIII. 114.
HAWK, XI. 247, 248; II. 77; XVI. 743.
— plasterers', V. 741.
Hawk's beak, in architecture, III. 468.
Hawk-moths, IX. 209.
Hawke (Admiral), V. 462, 465.
— (Mr), on the prospects of emigrants to Canada, VI. 148.
Hawke's patent organ, XVI. 713.
HAWKER, XI. 247.
— (Colonel), on wildfowl shooting, XX. 217.
Hawkes (John), on hunting, XII. 35.
HAWKESBURY, river of New South Wales, XI. 247; XVII. 608.
— (Lord), on the peace of Amlens, V. 589—secretary of state for foreign affairs, 577. See Liverpool, second Earl of.
HAWKESWORTH (John, LL.D.), XI. 247—account of Cook's first voyage, drawn up by, VII. 341—aided by Dr Joseph Warton in publishing *The Adventurer*, XXI. 733.
HAWKING, XI. 247. See Falconry.
HAWKINS (Sir John), navigator, XI. 249.
— (Sir John), historian of music, XI. 249—his edition of Walton's *Angler*, III. 163; XXI. 696.
— (John Isaak), his filter, IX. 581.
Hawksmoor's architecture, III. 455.
Hawkwood (Sir John), XIII. 113.
HAWLBOWLINE, island, XI. 250; VII. 371.
Hawley (General), defeated by Prince Charles at Falkirk, V. 461.
Haworth (Adrian Hardy), on the insensibility of insects to pain, III. 177—his entomological works, IX. 11.
HAWSE and Hawse-holes, XI. 250.
HAWSER, XI. 250.
Hawthorn, XVII. 760, 763.
— (Messrs), their locomotive engines, XX. 585.
Hawthornden, VIII. 408—residence of Drummond the poet, 190, 191.
Haxo (General), on fortification, IX. 834.
HAY, town in Brecknockshire, XI. 250.
— (Richard), his proposals for printing Fordun's *Chronicle*, IX. 778.
Haycraft on the heat of gases, XI. 274.
HAYDN (Francis Joseph), XI. 250—his diligence in study, XV. 729—his imitative music, 737—on melody, 729. See Music.
— (JOHN MICHAEL), XI. 251.

HAY—HEA

- HAYDON (Benjamin Robert), historical painter, XI. 252; XVII. 83, 84, 85.
HAYE, (La), town in France, XI. 253.
Hayes (Capt. John), H.M.S. *Magnificent* saved by, XX. 19.
— (Richard), on life annuities, XII. 397, *n.*
Haygarth (Dr), on mortality, XV. 603—on Perkins' metallic tractors, XX. 415.
HAYLE, seaport in Cornwall, XI. 253.
HAYLEY (William), XI. 253.
HAYMAKING, XI. 253; II. 330—defects of the Scottish method, 331—haymaker, implement, 279.
Haymarket Theatre, London, XIII. 676; XXI. 173.
HAYNAU, or Hainau, in Prussian Silesia, XI. 253.
— (General), his operations in Hungary, XII. 25.
Hayradin, king of Algiers, II. 567.
Hayter (Rev. John), his examination of the *Herculaneum MSS.*, XI. 345.
HAYTI, or San Domingo, XI. 253; II. 707—army of, III. 661—abandoned by the British in 1798, V. 565—French invasion of, in 1801, 591—bucaneers of, 707—declared independent, II. 707—Faustin I., emperor of, 708—monarchy, XV. 413—French trade with, X. 260—the Spaniards in, XVII. 30—measurement of the length of the pendulum at, VII. 230—reptiles of, XIX. 24, 34, 36—weights and measures, XVI. 811.
HAYWARD, XI. 258.
— (Mr), his essay on the poet Rogers, XIX. 247, *n.* 1—his description of Rogers' residence, 248.
Hazara, in the Punjab, XVIII. 687.
HAZARD, game of, XI. 258.
HAZAREEBAGH, town in Hindustan, XI. 258.
HAZEBROUCK, town in France, XI. 258.
HAZEL, XI. 258; XVII. 765—order of plants, V. 208—culture of, XI. 717—hazel-nuts, XVI. 395.
Hazel-colour, in dyeing, VIII. 313, 314.
Hazel-fly, in angling, III. 153.
HAZLITT (William), XI. 258—his connection with Northcote, XVI. 298.
Head, regions of the, III. 1—its size in male and female infants, 2—bones of, 15—muscles of, 38—of annelides, XI. 293—of insects, IX. 31—of the mammalia, XIV. 133—some animals continue to live after losing it, III. 177—wounds of, XIV. 431.
— in botany, V. 115.
— (Sir Francis), his administration in Canada, V. 665; VI. 159—on the condor, XVI. 738—celebrity given to Langenswalbach by the publication of his *Bubbles*, XIII. 183.
— (Sir George), on the Vatican Library, XIII. 412, 411, *n.* 4.
Headache, XVII. 700.
HEADBOROUGH, XI. 259.
Headley (Mr), on Drummond's poetry, VIII. 192, 193.
Headon eocene rocks, XV. 212, 213.
Heads of Colleges at Oxford, XXI. 455.
HEALFANG, XI. 259.
Health, riding and hunting beneficial to, XI. 673; XII. 33—effects of profession and trade on, XIV. 442—circumstances affecting, 440, 443—gymnastics, as contributing to, XI. 169—of seamen, XVI. 105, 106—salubrity of the atmosphere, IV. 184—marshy countries subject to fevers, *ib.*—influence of factory labour on, XIV. 279—Public Health Act, XIX. 604—effects of the use of tobacco on, XXI. 279. See Disease, Exercise, Sanitary Science, &c.
— BOARD OF, XI. 259; XIX. 604.
HEARING, XI. 259; XIV. 564; II. 98 *et seq.*; XVII. 679—in brutes, III. 178—in fishes, XII. 220; II. 99, 100—in bees, IV. 575—insects, IX. 45—organs of, in man, III. 45—in brutes, 98—organs of, in crustacea, VII. 538—in relation to music, XV. 703. See Ear, Deaf and Dumb.

HEA—HEA

- Hearing-trumpet, XXI. 361.
Hearman and Dearn's filter, IX. 580.
Hearne's journey to Coppermine River, X. 473; XI. 791; XVIII. 169—on the beaver, XIV. 185.
Hearsey (Major-General), his address to the mutinous sepoys, XVI. 301, *n.*
Heart, anatomy of, III. 63—Mondino's description of, II. 756—Aristotle's notions of, XIV. 122—course of the blood in, III. 65; XVII. 661—comparative anatomy of, III. 112—in mollusks, XV. 325—of ophidian reptiles, XIX. 48—diseases of, in the domestic animals, XXI. 574.
Heart-wood, V. 81; XXI. 267.
Hearths, building of, V. 740.
HEAT, XI. 260—nature of, *ib.*—diffusion of, 261—effects of, 267; I. 755—quantity of, in bodies, XI. 272—variations of temperature, 275—doctrine of, I. 755—views of Aristotle, Bacon, and the alchemists on, 756—considered in the eighteenth century as a branch of chemistry, 925—thermometers, 756 *et seq.*—Boerhaave's views as to its distribution, 758—Wolfius and Mairau's speculations on, *ib.*—Dr Martine the first judicious writer on, *ib.*—discovery of the congelation of quicksilver, 759—discovery of latent heat, 760 (see latent heat)—Dr Black's discoveries respecting, *ib.* (see Black, Dr Joseph)—specific heat, 761 (see that entry in Index)—radiant heat, 942 (see Radiant Heat)—conduction of, 951; mathematical theory of, 946—Fourier on, 946 (see Fourier)—Leslie's observations on increase and diminution of temperature by chemical union with bodies, 760—Irvine on, 926, 927; IV. 739; his theory of capacity, I. 761, 927—experiments of Wilcke and Lavoisier, 761, 932—determination of the absolute zero, 761—Dr Crawford's views, 761, 927; IV. 739—views and experiments of Scheele, I. 762—invention of the pyrometer, 763—a thermometer for measuring high temperatures still a desideratum, 763—metallic and register thermometers, *ib.*—differential thermometer, 764 (see that entry in Index)—hygrometer, 766—elasticity of, 767—radiation of, 768—pyroscope, 769—æthroscope, *ib.*—refrigerator, *ib.*—Prof. Kelland's theory of, 952—Dalton's researches relating to, 933 *et seq.* (see Dalton)—Lavoisier's contributions to, 932 (see Lavoisier)—Gay-Lussac on the specific heat of gases, 940—Rumford on the economical applications of (see Thompson, Benjamin)—Dulong on the laws of, 953 (see Dulong)—Prof. J. D. Forbes on, 952 *n.* 4, 956, 957 and *n.* 2; XI. 267—Regnault's contributions to the science of, I. 957—refrangibility of, 956—coloration of, *ib.*—mechanical effect of, 947—moveable equilibrium of, 944—action of different substances on the rays of, 956—polarization and depolarisation of (see these articles)—relation of light and, XIII. 454—Leslie on (see Leslie, Sir John)—reflection of, VI. 1—solar, I. 950; VI. 2; XIV. 637—in different latitudes, VI. 769 *et seq.*—mode of measuring, XIV. 638—its influence in chemical combinations, VI. 440—absolute quantity in the atmosphere the same at every elevation, 778—capacity of air for, at different degrees of rarity, *ib.*—its propagation through solids, liquids, and gases, 782, 783—performed by tremulous pulses, *ib.*—revolution in the mechanical arts from the application of heat, I. 770—Papin's digester, *ib.*—gradual improvement in the steam-engine from a knowledge of the laws of, *ib.*—effect of heat on the barometer, IV. 456; correction of that instrument as effected by, 457—cold the diminution of, VII. 99—Wollaston's cryophorus, 544—its influence on fluidity, XII. 73; and on the motion of fluids, 145—its influence

HEA—HEB

- on magnetism, XIV. 6, 9, 35—connection between heat and magnetism of the earth, 11—its effect on the distribution of magnetism in magnets, 37—conversion of, into mechanical energy, 418—on land and water as recipients and communicants of, 643—its influence in promoting the conduction of electricity, VIII. 540, 541—property of some bodies of becoming electrical by heat, 529, 557—its influence on the electrical fluid in metals, 561—evolution of, by electricity, 591—evolution of, in blossoms of plants, V. 149—excites electricity in some minerals, XV. 60—of the interior of the globe, XIV. 636; XV. 184—death from, XIV. 431—its effect on the health of bakers, &c., 443—heat of the spectrum, I. 954, 956—its influence in producing a polarising structure in glass, XVI. 540—effect of, on the double refraction of crystals with one, two, and three axes, 657—circular polarization of, 683—fancied coldness of the moon's light, VII. 101, 766; discovery of heat in, XIV. 485—climatological distribution of, 670—animal heat, XVII. 665—its influence on health, XIX. 608—heat liberated by combustion, XX. 353—mechanical theory of, 560—constituent heat of steam, 566—dynamical expression of quantities of, 618—laws of the expansive action of, *ib.*—efficiency of heat-engines, 619—heat-economiser, *ib.*—of combustion of coal and coke, 630—Count Rumford's publications on, XXI. 231, 232—sources of volcanic, 606—produced by voltaic electricity, 626, 637. See Boiling, Burning-glasses, Climate, Cold, Congelation, Dew, Evaporation, Latent Heat, Pyrometer, Radiant Heat, Reflection, Steam, Temperature, Thermometer, Thermo-electricity, &c.
HEATH, XI. 276—order of plants, V. 198—in Africa, II. 216—plants growing on, V. 221—culture of, XI. 757—region of heaths, V. 228; XVII. 629.
— breed of sheep, II. 347.
— (Josiah), his patent for the manufacture of cast-steel, XXI. 321.
— (Rev. Dunbar), on Egyptian papyrus, XI. 409; XVII. 264.
Heathcoat's lace-frame, VII. 451; XIII. 143.
Heathen, meaning of the word, I. 456.
Heathenism, relation of Mohammedanism to, XV. 307.
Heather, favourite food of bees, IV. 587.
HEATHFIELD (Lord), XI. 276. See Elliot.
Heating, nature of, for ventilation, XXI. 541.
Heavens, phenomena of, IV. 1—sun's course in the, 11—words denoting heaven, in different languages, XIII. 199. See Astronomy.
Heavy spar, XV. 94—specific gravity of, XII. 88.
Hebdomadal council, in university of Oxford, XXI. 456.
Hebdomarius, VIII. 368.
HEBE, goddess, XI. 276.
— planet, IV. 91.
HEBER (Reginald), bishop of Calcutta, XI. 276—on the occurrence of the lion in India, 455, *n.* 2—on the Himalayan vulture, 456—on Cawnpore, VI. 357—on Kemaon, XIII. 59, 60—on the Himalayas, XI. 448—on a mode of fishing in India, 457—on Hindu penance, 469—on the Indian races, 463 *et seq.*—on Oude, XVII. 18—on the prevalence of the taste for English goods in India, XI. 461—on Lucknow, XIII. 713—Delhi, VII. 706.
HEBERDEN (William), physician, XI. 276—on rain, XIV. 656, 657—on mortality, XV. 602, 608.
Hebertists, X. 85.
HEBREW LANGUAGE, XI. 277; XIII. 209; XIX. 833, 834—accents, II. 75—alphabet, 614—and Chinese, VI. 558—Bibles, IV. 697—lexicons, XVII. 526—gram-

HEB—HEI

- mar, ib.—Hebrew poetry, XVIII. 97.
See Jews.
- HEBREWS, Epistle to the, XI. 277.
- HEBRIDES, XI. 278—ancient names of, VIII. 370—confounded with Hyperbo-reans, II. 10—cattle of, 342—pigs, 355—heights of mountains in, XVII. 643—Dr Johnson's visit to, XII. 801; V. 64—geology, XIX. 792—mountains, 794.
- (New), islands, XI. 280; IV. 265.
- HEBRON, XI. 280; XVII. 189, 190.
- HEBRUS, river of Thrace, XI. 280.
- HECATÆUS, XI. 280.
- HECATE, goddess, XI. 281.
- HECATOMB, XI. 281.
- HECATOMBAEON month, XI. 281.
- HECHINGEN, German city, XI. 281.
- Heckling of flax, XIII. 495.
- HECLA (Mount), XI. 281; XII. 201; IX. 384; XVII. 644.
- HECTARE, XI. 281; X. 284.
- HECTOGRAMME, XI. 281; X. 284.
- HECTOLITRE, XI. 281; X. 284.
- Hectocotyles, entozoa, XXI. 982.
- HECTOMETRE, XI. 281; X. 284.
- HECTOR, XI. 281—character of, XVIII. 100.
- HECUBA, wife of Priam, XI. 281; XVIII. 511.
- Heddles of looms, XXI. 783 *et seq.*
- Hederaceæ, nat. order of plants, V. 195.
- Hedge trees and shrubs, XVII. 760.
- HEDGEHOG, XI. 281; XIV. 150; XXI. 548—cantharides eaten by, III. 179—hybernation of, 180; XII. 62—pairing of, 182—stores up food, III. 181—den-tition of, XVI. 451.
- Hedges on farms, II. 269—hedge plants, V. 221.
- HEDJAZ (el), in Arabia, XI. 281; III. 341 *et seq.*
- HEDWIG (Johann), XI. 281—on the lym-phatics, II. 804—on the villi of the ileum, III. 61—on the reproductive organs of mosses, V. 153.
- Hedychrum, genus of insects, IX. 193.
- Hedyphane, XV. 106.
- Hedysarum gyrans, motion of its leaves, V. 108, 109.
- Heeger (E.), his works on insects, IX. 20.
- Heel-bone, III. 36, 37.
- Heer (Osw.), his works on insects, IX. 20.
- Heeren (Prof.), on the course of civilisa-tion in Egypt, III. 437—on the Pelas-gi, 439—on the ancient kingdoms of Persia, 438—on the African and Asiatic nations, XVIII. 161, n. 2—translation of his essay on the Crusades, XXI. 589.
- HEGEL (G. W. Friedrich), XI. 281—on philosophy, XIV. 551—his contempt for English philosophy, ib., n. 6—on cos-mology, 605, n. 5; his system of phi-losophy, 608—his pantheism, XVII. 237—his intimacy with Schelling, XIX. 714.
- Hegesippus on the posterity of Jude, XIII. 14.
- Hegeter, genus of insects, IX. 129.
- HEGIRA, XI. 284—era of the, VI. 673, 677; XV. 300.
- Heiberg (J. Ludvig), Danish author, XIX. 695.
- (Madame), XIX. 695.
- HEIDELBERG, XI. 284—university of, IV. 360; XXI. 492—library of, XIII. 421—plundered by Count Tilly, II. 633—catechism, XXI. 496.
- Heights, mensuration of, XIV. 502; in the trigonometrical survey, XXI. 336—of the principal mountains in the world, XVII. 642 *et seq.* See Barometrical Measurements.
- HEILBRONN, town of Wurtemberg, XI. 285; XXI. 938.
- HEILIGENSTADT, town in Prussian Saxony, XI. 285.
- Heilmann's wool-combing machine, XXI. 924.
- Heilmar, lake, XX. 861.
- HEINE (Heinrich), German poet, XI. 285.
- HEINECCIUS (J. Gottlieb), jurist, XI. 285.
- Heinecker (Dr), on the dew-points at Fun-chal, IV. 184.

HEI—HEL

- Heineken on wood-engraving, XXI. 902, 903.
- Heinse, his novels, XIX. 292.
- HEINSIUS (Daniel), XI. 286.
- (NICOLAS), XI. 286.
- HEIR-AT-LAW, XI. 286.
- by destination, XI. 286.
- apparent and presumptive, XI. 287; III. 307.
- Heister (Laurence), on surgery, XX. 818.
- Helæus, genus of insects, IX. 131.
- Helcon, genus of insects, IX. 188.
- HELDER, town in Holland, XI. 287.
- Helderberg group of rocks, XV. 199.
- HELENA, daughter of Leda, XI. 287; XVII. 285.
- luminous meteor, VI. 328.
- (St), empress, XI. 287—her pilgrim-age to Jerusalem, XII. 734; XVII. 195.
- (St), island, XI. 287—Halley's voy-age to, I. 658—meteorological observa-tions, XIV. 686.
- HELENSBURGH, in Dumbartonshire, XI. 288.
- HELENUS, son of Priam, XI. 288.
- Helper (J. W.), his work on insects, IX. 17.
- HELIACAL, XI. 288.
- HELIADÆS, sisters of Phaëthon, XI. 288; XVII. 504.
- HELLEA, XI. 288.
- Helianthoida, polypes, XXI. 1002.
- Heliases, genus of fishes, XII. 265.
- Helical motion, XIV. 389—teeth, 396.
- Helicidæ, family of mollusks, XV. 373.
- HELICON, XI. 288.
- astronomer, III. 789.
- Heliconius, genus of insects, IX. 207.
- HELIER (St), capital of Jersey, XI. 288; XII. 730.
- HELIGOLAND, islands, XI. 288.
- Helioceras, fossil mollusks, XVII. 113.
- Heliocidaris, fossil echinoidea, XVII. 100.
- HELIODORUS, XI. 289.
- Roman surgeon, XX. 813.
- Heliogabalus. See Elagabalus.
- Heliography, XVII. 545.
- Heliolites, fossil corals, XVII. 97.
- HELIOMETER, XI. 289; I. 865—Bouguer's, V. 244; XIV. 747.
- HELIOPOLIS, in Egypt, XI. 289; VIII. 498; XVI. 514—battle of, VIII. 474.
- in Syria. See Baalbec.
- Helioscope, XXI. 133.
- HELIOTAT, in optics, XI. 289; IX. 555, n.
- HELIOTROPE, astronomical instrument, XI. 289; IX. 555, n.
- mineral, XI. 289; IV. 789; XV. 69.
- genus of plants, XI. 289; V. 201.
- HELIX, in geometry, XI. 289.
- genus of mollusks, XV. 373.
- in architecture, XI. 289; III. 510.
- Hell, Scandinavian notion of, XV. 767.
- (X. Hommaire de), on the Black Sea, IV. 741.
- (Father), his dispute with Mesmer, XIV. 547; XX. 417—his astronomical observations, XIII. 159.
- HELLANICUS, historian, XI. 289.
- HELLANODICÆ, XI. 289.
- HELLAS, XI. 290, 9, 18.
- HELLE, in mythology, XI. 290.
- HELLEBORE, XI. 290; V. 180—poisonous properties, XIV. 439.
- HELLENISMS, XI. 290.
- HELLENISTS, XI. 290.
- HELLESPONT, XI. 290; VII. 655.
- HELLIN, town of Spain, XI. 290.
- Hellmouth (Dr Julius), his account of a poisonous fish, XII. 331, n.
- Hellot on dyeing, VIII. 274—his process for dyeing woollen black, 305.
- Hellwig (J. C. L.), his work on insects, IX. 11.
- Hellwigia, genus of insects, IX. 192.
- Helm, weather, and lee-helm, XX. 160. See Rudder.
- HELMET, XI. 290—in heraldry, XI. 337.
- tun, shell, XV. 386.
- Helminth, mineral, XV. 78.
- HELMINTHOLOGY, XI. 290.

HEL—HEM

- HELMONT (Jean Baptiste Van), XI. 308; VII. 766; XIV. 460; XX. 416.
- HELMSTEDT, German town, XX. 308.
- HELMUND, river, XI. 308; II. 202; XX. 36.
- Helodus, genus of fossil fishes, XII. 340.
- Heloise, II. 26.
- Helomyza, genus of insects, IX. 255.
- Helophilus, genus of insects, IX. 241.
- Helophorus, genus of insects, IX. 116.
- Helopii, tribe of insects, IX. 132.
- Helops, genus of insects, IX. 132.
- Heloptilus, genus of insects, IX. 163.
- HELOS, in Laconia, XI. 308—plain of, XIII. 148.
- Helostoma, genus of fishes, XII. 290.
- Helotes, genus of fishes, XII. 277.
- HELOTS, Spartan slaves, XI. 308—revolt of, XX. 501.
- HELSINGFORS, Russian town, XI. 309; IX. 585—university of, XXI. 492.
- HELSTONE, town in Cornwall, XI. 309.
- HELVELYN, mountain in Cumberland, XI. 309—VII. 576; XVII. 643; XXI. 842.
- Helvetia, XX. 883.
- Helvetic republic, XX. 886.
- HELVETII, XI. 309; XX. 883.
- HELVETIUS (Claude-Adrien), XI. 309—his extension to metaphysical subjects of Leibnitz's law of continuity, I. 135—on the origin of our knowledge, 178, 179—causes of the inferiority of the souls of brutes, 179—on the modifications of genius, 185—on memory, IV. 778—his literary obligations to Diderot, VIII. 15.
- Helvine, mineral, XV. 85.
- HELVETSLIUS, town in Holland, XI. 310.
- HEMANS (Mrs), XI. 310—poetry of, XVIII. 127.
- HEMATINE, dye stuff, XI. 311; VIII. 287, 288.
- Hematite, VI. 489. See Hæmatite.
- Hematophic organs, III. 63—in the lower animals, 112.
- HEMEL-HEMPSTEAD, in Hertford, XI. 311.
- HEMEROBAPTISTS, XI. 311.
- HEMEROBINI, insects, IX. 178.
- Hemerobius, genus of insects, IX. 178.
- Hemerocostes, genus of fishes, XII. 273.
- HEMERODROMI, XI. 311; VII. 467.
- Hemerodromia, genus of insects, IX. 236.
- HEMI, verbal affix, XI. 311.
- Hemilaster, fossil echinoidea, XVII. 100.
- Hemicardium, genus of mollusks, XV. 349.
- Hemicidaris, fossil echinoidea, XVII. 99, 100.
- Hemidactyli, reptiles, XIX. 36.
- Hemigaleus, genus of fishes, XII. 327.
- Hemiglyph, in architecture, III. 510.
- Hemihedric crystals, XV. 41.
- Hemilepidotus, genus of fishes, XII. 282.
- Hemimorphism in crystals, XV. 49.
- HEMINGFORD (Walter), XI. 311.
- Hemiodon, genus of fishes, XII. 263.
- Hemiodus, genus of fishes, XII. 246.
- Hemipalma, genus of birds, XVI. 804.
- Hemiplegia, XVII. 700.
- Hemipneustes, fossil echinoidea, XVII. 99, 100.
- Hemipristis, genus of fossil fishes, XII. 341; XVII. 118, 119.
- Hemiptera, order of insects, IX. 25, 160.
- Hemiramphus, genus of fishes, XII. 264.
- Hemirhipus, genus of insects, IX. 106.
- Hemirhynchus, genus of fossil fishes, XII. 346.
- Hemiscyllium, genus of fishes, XII. 323, 209, 221, 222.
- Hemispheres, X. 480; XVI. 7—magnetic, XVII. 617.
- Hemithylacus, genus of fishes, XII. 315.
- Hemitripterus, genus of fishes, XII. 282.
- HEMLOCK, XI. 311; V. 195. See Conia.
- spruce, tree, V. 209.
- Hemman (Mr), his anchor, III. 118.
- Hemmer (J. J.), on the electricity of the human body, VIII. 571.
- (J. J. B.), his work on insects, IX. 11.
- HEMP, XI. 311; V. 206; II. 333—as an

HEN—HEN

- anæsthetic, VI. 632—culture of, in Ca-nada, 147—smoked in India, XI. 454; and Egypt, VIII. 431, 448—imports of, 734—in France, X. 254—for the navy, XVI. 100—in rope-making, XIX. 401—hackling of, 403—intoxicating liquor from, XX. 804. See Hasheesh, Flax.
- Hemp, Manilla, V. 211; XI. 313; XXI. 782.
- order of plants, V. 206.
- Hempel's filter, IX. 582.
- Hemprich (F. S.), his work on insects, IX. 17.
- Hempstead eocene rocks, XV. 211, 213.
- HEMS, or Homs, Syrian city, XI. 313.
- HENAUT (Charles-Jean-François), XI. 313—his character of Mazarin, XIV. 374—on the degradation of the coin, XV. 435, n. 1.
- HENBANE, XI. 314; V. 202—its effect on the pupil of the eye, III. 44.
- Hencke (M.), planets discovered by, IV. 91.
- Hendenbergite, mineral, XV. 81.
- Henderson (Ebenezer), on mud-volcano in Iceland, XII. 262.
- (Thomas), his birth and character, I. 863—his appointment to the Cape of Good Hope Observatory, 864—his discovery of the parallax of a star, ib.; IV. 96—his appointment to the Edin-burgh Observatory, III. 818—his astro-nomical labours, ib.
- Hendricks (F.), on insurance, XII. 393 *et seq.*
- HENRY ISLE, XI. 314.
- Henfrey (Prof.), on test-objects for the microscope, XIV. 804.
- HENG-KIANG, river in China, XI. 314.
- HENG-TCHOU, Chinese city, XI. 314.
- HENGIST, XI. 314; V. 381—ships of, XX. 118.
- Hengstenberg, on the book of Hosea, XI. 761—Isaiah, XII. 626.
- Henin (Baron d'), on animal magnetism, XX. 426.
- Heniochus, genus of fishes, XII. 300, 302.
- Henle (J.), his system of anatomy, II. 769—on blood-globules, 780—on tissues, 786—on the arteries, 789, 790—on the capillaries, 798—on the helicine arte-ries, 801—on the nerves, 809, 810.
- HENLEY-IN-ARDEN, in Warwickshire, XI. 314.
- HENLEY-ON-THAMES, in Oxfordshire, XI. 314.
- Henley's electrical discharging instru-ment, VIII. 611—his quadrant electro-meter, 619—Henley and Foster's mag-netic telegraph, XXI. 107.
- HENNA, XI. 314; V. 191; VIII. 431.
- Hennah (Mr), his photographic process, XVII. 547.
- Hennebone, French town, X. 17.
- HENNERSDORF, in Saxony, XI. 314.
- Hennessy (Prof.), on metamorphic rocks, XV. 151.
- Henops, genus of insects, IX. 236.
- HENOTICUM, edict of Zeno, XI. 314.
- Henri's attempt on the life of Louis Philippe, X. 224.
- Henrietta (Queen), V. 388, 391.
- Henriot, X. 90 *et seq.*
- Henriquillo, lake in Hayti, XI. 254.
- HENRY I., of England, XI. 314—reign of, VIII. 669—his death and character, 670.
- II., XI. 314—proceedings between him and Becket, IV. 562—his residence in Dublin, VIII. 217—his reign, 671—death, 674—duelling in his reign, 230—his invasion of Ireland, XII. 468.
- III., XI. 314—league of the barons against, VII. 529—reign of, VIII. 678—character of, 680—his conduct towards the Irish, XII. 469; towards the Jews, 779—his intrigues with Scotland, XIX. 754—the Forest Charter confirmed by, XX. 210—his encouragement of the university of Oxford, XXI. 453—his public instruments relative to Cam-bridge University, 460, 461.
- IV., XI. 314—reign of, VIII. 686

HEP—HEP

- act regarding the coinage, VII. 77—duelling under, VIII. 231—his fleet, XX. 122.
- HENRY V., XI. 314—reign of, VIII. 687—his invasion of France, X. 22—death and character, VIII. 688—law regarding wool bought by foreigners, VII. 77—letter of, XVI. 90—his navy, ib.; XX. 122.
- VI., XI. 314—reign of, VIII. 688—act regarding bullion, VII. 77—act permitting exportation of corn, 374—mints in his reign, 73—his patronage of free-masons, XIV. 338—navy in the reign of, XVI. 90, 91.
- VII., XI. 314—reign of, VIII. 694—character, 697—Bacon and Hume's eulogy on the laws of, I. 37—his tomb, III. 449—archery in his reign, 425— anecdote regarding, and the earl of Oxford, XIII. 524—chapel of, 671—navy, XVI. 91—mints in his reign, VII. 73—shipping of England in his reign, XX. 124, 125—university of Oxford, XXI. 454.
- VIII., XI. 314—his marriage to Anne Boleyn, III. 217; VII. 482—archery in his reign, III. 425, 427—the coin debased by, VII. 72, 77—distress thus occasioned, 375, *n.* 1—his treatment of Becket's shrine and remains, IV. 562—his divorce from Queen Catherine, VII. 480—482—subsequent marriages, 482—religious persecutions, ib.—his title of Defender of the Faith, 694—history of his reign, VIII. 697—his character, 706—his Irish policy, XII. 474—his household, XI. 773—dock-yards first erected by, VIII. 78, 85—his book against Luther, XIII. 729—masquerades introduced in his reign, XIV. 339—his intimacy with Sir Thomas More, XV. 583—his navy, XVI. 91—post-office under, XVIII. 403—his share in the Reformation, 824, 828—his wars with Scotland, XIX. 765 *et seq.*—shipping in his reign, XX. 126—Oxford University, XXI. 454.
- I. of France, XI. 314; X. 12.
- II. of France, XI. 314; X. 31—killed at a tournament, VIII. 230.
- III. of France, XI. 314; X. 33.
- IV. of France, XI. 314—reign of, X. 33—his edicts against duelling, VIII. 231—his beard, IV. 528—George Carew's account of him and his court, VI. 236—Paris embellished by, XVII. 278.
- IV. of Castille, XX. 464.
- IV. of Germany, his quarrels with Pope Gregory VII., XI. 50—his attacks on Rome, XIX. 365.
- V. of Germany, XII. 645.
- VII. of Germany, X. 579; XII. 649.
- Prince of Wales, son of James I. V. 386.
- (Dr), on the qualities of different kinds of salt, XIX. 585.
- (Joseph), his galvanic battery, XXI. 617—his reciprocating apparatus, 641.
- (MATTHEW), XI. 315.
- of Huntingdon, XI. 314.
- (Patrick), on Washington, XXI. 748.
- (ROBERT, D.D.), XI. 315—on the introduction of coinage into Britain, VII. 69—last volume of his history completed by Malcolm Laing, XIII. 158.
- (Tho.), his experiments on bleaching, IV. 759, 760.
- Dr WILLIAM, XI. 315—on oil-gases, X. 427—429—his electro-magnet, XIV. 75—on the decomposing effects of voltaic electricity, XXI. 628.
- (Dr Wm. Charles), his notice of Dr Wm. Henry, XI. 316.
- HENRYSON (Robert), Scottish poet, XI. 316; XVIII. 120.
- Henwood (W. J.), his account of Cornish lodes, XV. 219.
- (Mr), on pitching and scending in ships, XX. 160.
- Hepatitis, mineral, XV. 95.
- Hepatic pyrites, XV. 115.

HEP—HER

- Hepatic duct, III. 62. See Liver.
- Hepatica, nat. order of plants, V. 217—reproductive organs of, 145.
- Hepburn (Arch.), on storing turnips, II. 318.
- (John), St Leonard's College founded by, XXI. 473.
- HEPHESTÆA, XI. 317. See Lampadephoria.
- HEPHESTION, XI. 317.
- general of Alexander the Great, XIII. 771.
- HEPHESTUS, one of the names of Vulcan, XI. 317.
- Hepialites, IX. 211.
- Hepialus, genus of insects, IX. 211.
- HEPPENHEIM, XI. 317.
- HEPTAGON, in geometry, XI. 317.
- Heptanchus, genus of fishes, XII. 324.
- HEPTARCHY, XI. 317—Saxon, VIII. 656—mints under the, VII. 70.
- Heptatrema, genus of fishes, XII. 227, 228.
- Hepu-her, Egyptian deity, VIII. 439.
- HERA, XI. 317. See Juno.
- HERACLEA, city of Magna Græcia, XI. 317—battle of, XIX. 305; XXI. 22.
- city of Sicily, XI. 317.
- PONTICA, in Bithynia, XI. 317.
- HERACLEONITES, Gnostic sect, XI. 317.
- HERACLIDÆ, XI. 317; XIII. 747.
- HERACLIDES (Ponticus), XI. 318.
- HERACLITUS, philosopher, XI. 318; XVII. 232—on the souls of animals, III. 309—Socrates' opinions of his writings, XX. 373.
- HERACLIUS, emperor, XI. 318—Egypt under, VIII. 474—his edict, Ethesis, XV. 501.
- HERALD, XI. 319.
- HERALD'S COLLEGE, XI. 319; VII. 115.
- COURT, XI. 320.
- HERALDRY, XI. 321—an element of criticism in archaeology, III. 422—its symbols well fitted for being represented on stained glass, X. 669.
- Herapath and Cox's method of tanning, XIII. 308.
- HERAT, XI. 342—siege of, by the Persians, in 1838; XVII. 442.
- HERAULT, in France, XI. 342.
- Herbaceous plants, XI. 749; V. 78.
- Herbage crops, II. 322.
- Herbart, his system of philosophy, XIV. 609.
- HERBELOT (Bartheleml d'), XI. 342.
- Herbert (Colonel), on the Himalayas, XI. 439.
- (EDWARD), Lord Herbert of Chesham, XI. 342; VI. 603— anecdote of, 626—his deistical works, VII. 701.
- (GEORGE), XI. 343.
- (Sir THOMAS), XI. 344.
- Herbivorous animals, their disposition and organisation, III. 172—seldom pair, 181—season of their parturition, 182—herbivorous cetaceæ, XIV. 216.
- Herbois (Collet d'), X. 71.
- Herbst (J. F. W.), his works on insects, IX. 10.
- Hercen on the Crusades, VII. 527.
- HERCULANEUM, XI. 344; III. 445, 456— theatre of, 470—Sir H. Davy's attempts to unroll the papyri found at, VII. 672; XV. 782—glass utensils found at, X. 658—academy of, II. 70—frescoes and papyri found at, XV. 781; XVII. 265.
- HERCULES, XI. 346—proportions of the statue of, VIII. 172—his wars with Antæus, XIV. 360—labours of, XV. 766.
- a machine, III. 120.
- constellation, IV. 79.
- (PILLARS OF), XI. 347; X. 618.
- HERCYNIA SILVA, XI. 347. See Harz.
- HERDER (J. Gottfried Von), XI. 347, 544—on poetry, XVIII. 99, 109.
- Herderite, mineral, XV. 94.
- Herdwick's breed of sheep, II. 347; VII. 577.
- Hereditary predisposition to insanity, XIV. 535—monstrosities, XV. 503—transmission of diseases, qualities, &c., in the horse, XI. 636 *et seq.*
- HEREFORD, English city, XI. 348.

HER—HER

- HEREFORDSHIRE, XI. 349—cattle of, II. 340, 341—old red sandstone of, XV. 200—population and value of property, VIII. 754—wool of, XXI. 910.
- HERENCIA, Spanish town, XI. 350.
- HERESY, XI. 350—capital punishment of, approved of by Cranmer, VII. 483—pretext on what secular power is called on to suppress, I. 538.
- Heretic and heretical, I. 528, 529—proper meaning of the words, 529, *n.*
- HERETOCH, XI. 351.
- Hereward, VIII. 668.
- HERFORD, or Hervorden, Prussian city, XI. 351.
- Heriades, genus of insects, XI. 199.
- HERIOT, in law, XI. 351; VII. 355.
- Heriot's Hospital, VIII. 401.
- birthplace, XI. 178.
- HERISAU, Swiss town, XI. 351.
- Herissant on cartilages, II. 765, 831.
- Hermanfroi, X. 4.
- HERMANN (J. Jakob Gottfried), XI. 351; XVII. 525—his opinion of Gilbert Wakefield, VII. 586, *n.* 7.
- of Pavia, on the doctrine Conservatio virium vivarum, VIII. 354.
- on the electricity of the atmosphere, VIII. 580.
- HERMANNSTADT, in Hungary, XI. 352.
- Hermanus, or Armenius, X. 575.
- HERMAPHRODITE, XI. 352; III. 171; XIV. 426; XVII. 683—cephalous mollusks, XV. 358—annelides, XI. 291, 305—flowers, V. 125.
- HERMAS, one of the fathers, XI. 352; IX. 491.
- HERMENEUTICS, XI. 352—foundation of the modern school of, XVII. 520.
- HERMES, and Hermæa, XI. 352; XIV. 541; I. 457. See Mercurius.
- (Egyptian), Trismegistus, or Thoth, XV. 760, 765; XI. 383; VIII. 437.
- HERMETICAL SEALING, XI. 352.
- HERMIANI, heretics, XI. 352.
- Hermias, III. 570.
- (C. Cæcilius), signet of, XVIII. 521.
- Herminia, genus of insects, IX. 217.
- HERMIT, XI. 352.
- crabs, VII. 542.
- Hermitage (The), in Petersburg, XVII. 491.
- wine, XXI. 883, 889, 512.
- Hermodorus, VI. 740.
- HERMOGENES, painter, XI. 352.
- Roman lawyer, VI. 742.
- TARSSENSIS, XI. 352.
- HERMON (Mount), XI. 352; XVII. 183, 644; XX. 901, 903, 906—supposed scene of the Transfiguration, XXI. 325.
- Hermoneura, genus of insects, IX. 233.
- Hermonthis, ruins of, VIII. 513.
- HERMOPOLIS MAGNA, XI. 352; VIII. 504.
- HERMUS, river, XI. 353.
- Hernandez on birds, XVI. 725.
- HERNE BAY, village in Kent, XI. 353.
- HERNIA, XI. 353; II. 766—surgical treatment of, XX. 830—in cattle, XXI. 568.
- HERNICI, ancient Italian tribe, XI. 353.
- HERNOSAND, in Sweden, XI. 354; XX. 864.
- HERO, priestess, XI. 354.
- and heroic age, XI. 354—plays of heroic age, VIII. 161—deification of heroes, XV. 766; I. 458.
- mathematician, his thermometer, IV. 456—his hydrodynamical inventions, XII. 69—his fountain, XVIII. 28; applied to the raising of water from a mine, 86—his modes of showing the effects of steam, XX. 573.
- the younger, X. 502.
- HEROD THE GREAT, XI. 354; XII. 733, 771 *et seq.*; XVII. 194—his temple at Jerusalem, XII. 742.
- AGRIPPA, XI. 355; II. 421; XVII. 194.
- ANTIPAS, XI. 355; III. 275; XII. 770.
- HERODIANS, Jewish sect, XI. 355.
- HERODIANUS, XI. 355—Poliziano's version of, XVII. 522.

HER—HER

- HERODOTUS, XI. 355—on the battle of Marathon, IV. 199, *n.* 1—on the Amazons, II. 650—on Babylon, XIX. 846; IV. 340, 346—on India, III. 752—on places whence the ancients obtained gold, XV. 230—on embalming, VIII. 643—on Egyptian divinities, 435—his fidelity as a historian, XI. 368, *n.* 1—on the people of Egypt, 371, *n.* 6—on the age of Homer, 596—on Egyptian writing, 377—on Egypt, VIII. 420—his account of Cyrus, VII. 612—on the Pelasgi, XVII. 370—his allusion to Nineveh, XVI. 273—on Syria, XX. 901—on the Phœnicians, 905.
- Herold (F.), his works on insects, IX. 18.
- HERON, bird, XI. 357; XVI. 798.
- mathematician, XI. 356—Egyptian king, 388.
- the younger, XI. 356.
- Herophilus, his anatomical knowledge, II. 751, XIV. 452—his skill in surgery, XX. 811.
- Herpestes, genus of mammalia, XIV. 166.
- Herpestreng (Henrick), XIX. 692.
- Herpetodryas, genus of reptiles, XIX. 57.
- Herpetoichthys, genus of fishes, XII. 232.
- HERPETOLOGY, XI. 357. See Reptilia.
- Herregrund, mines of, XVI. 155.
- Herrera, the elder, teacher of Velasquez, XXI. 533.
- (FERDINAND DE), Spanish poet, XI. 357—poetry of, XVIII. 114.
- (General), president of Mexico, XIV. 714.
- TORDESILLAS (Antonio de), Spanish historian, XI. 357.
- Herrerite, mineral, XV. 100.
- Herrich-Schaeffer (G. A. W.), his works on insects, IX. 21.
- HERRICK (Robert), English poet, XI. 357; XVIII. 122.
- HERRING, XI. 358; XII. 235—quantity cured and exported from Britain, in 1851, VIII. 727—quantity exported, from 1810 to 1854, IX. 640—as an article of food, 635, 763—different kinds of, 635—gutting, 638—trials of the merits of the British and Dutch, 639—quantity cured at different places in Scotland, 640—foreign duties on, 641, *n.* 2—smoking of, 643—in the Caspian sea, VI. 312—expediency of abolishing the brand on, XIV. 289—oil from, XVI. 494—red, IX. 643—migrations of, XVII. 636.
- Herring-fishery, in the Baltic, IV. 404—Britain, IX. 635—Caithness, VI. 62; IX. 635—Donegal, VIII. 105—in Holland, XI. 583—England, VIII. 727—Ireland, IX. 633—Scotland, 635; XIX. 804—number of boats, amount of tonnage, men employed, &c., in Scotch herring-fishery in 1854, IX. 642. See Fisheries.
- Herring-salmons, XII. 243.
- HERRNHUT, town in Saxony, XI. 358; IV. 813.
- Herrnhutters, XI. 358; XXI. 971. See Bohemian Brethren.
- Herschel (Sir J. F. W.), I. 861—notation of differentials introduced at Cambridge by, 807—on aurora borealis, IV. 250—on the cause of the rolling of thunder, VIII. 583—his actinometer, II. 118—on Schumacher's astronomical work, III. 814—on the magnitudes of stars, IV. 95—on the pyramids of Egypt, VIII. 500, *n.*—on nebule, IV. 85—on M. Plana's analysis, I. 826—his astronomical career, 861—his observations at the Cape of Good Hope, 862—his high character, ib.—on the orbits of double stars, ib.—on the brightness of stars, ib.—on variable stars, ib.—his treatise on light, 917—on magnetism, XIV. 10, 32, 33, 35—his doublet microscopes, 773, 774—his optical discoveries, XVI. 545, 561, 572, 573 *et seq.*—on the spectrum, 591, 594, 595—master of the mint, VII. 82—his report on the mint, 83—on planetary machines, XVII. 753—coloured image of the solar spectrum by means of photography obtained by, 552.

HER—HEU

- HERSCHEL** (Sir William), XI. 358—sketch of his life and works, I. 838—his astronomical discoveries, 788, 840 *et seq.*; III. 807; IV. 72—sidereal astronomy founded by, I. 800, 839—as an optician, 839—his improvements in telescopes, *ib.*—on the solar spots and atmosphere, *ib.*—on the planets, I. 840—Saturn and his ring, IV. 71, 72; I. 840—Mars, IV. 66—on the fixed stars, 81, 82, 84; I. 841—on double stars, *ib.*; IV. 84—on nebulae and the nebular hypothesis, I. 842, 843; IV. 85, 86—on the constitution of the starry heavens, and the milky way, I. 843 *et seq.*—his “gauges” 844—determines the direction of the motion of the solar system in space, 846—summary of his discoveries, *ib.*—his character and death, 847—on the spectrum, 752, 846, 954; XI. 263; XIII. 452—his micrometers, XIV. 753, 757—on the transmission of heat through glass, I. 951—on optics, XVI. 535, 592—his telescopes, XXI. 128. — (Caroline Lucretia), I. 857, *n.* — and South’s catalogue of stars, IV. 95.
- Herschelite**, mineral, XV. 77.
- HERSFELD**, in Hesse-Cassel, XI. 358.
- HERSTAT**, in the Netherlands, XI. 358.
- HERTFORD**, XI. 358—savings-bank at, XIX. 657.
- (Earl of), his invasion of Scotland, XIX. 777.
- HERTFORDSHIRE**, XI. 358—population and value of property, VIII. 754.
- HERTHA**, or **Herthus**, German deity, XI. 360; I. 457.
- HERULI**, XI. 360.
- Hervart’s tables** of the powers and products of numbers, I. 706.
- Hervas**, philology advanced by, XVII. 528.
- HERVEY** (James), XI. 360.
- (John), lord, XI. 360.
- islands, XVIII. 278.
- Herz** (Henrik), Danish poet, XIX. 695.
- Hesarorad**, Turkish town, XVIII. 807.
- HESIODOS**, **Hesiod**, XI. 361—poems of, XVIII. 101.
- Hesione**, genus of annelides, XI. 299.
- Hesperis-sphinges**, insects, IX. 209.
- Hesperia**, genus of insects, IX. 209.
- HESPERIDES**, nymphs, XI. 361.
- HESSE**, country of Germany, XI. 361.
- **Cassel**, or **Kur-Hessen**, XI. 362—coins of, XV. 444—university in, XXI. 492—weights and measures, 811.
- **Darmstadt**, XI. 362—university in, XXI. 492—weights and measures, 811.
- HESSE-HOMBURG**, XI. 363.
- Hessite**, mineral, XV. 118.
- Hessonite**, XV. 85.
- HESYCHUS**, lexicographer, XI. 363.
- Egyptian bishop, his recension of the New Testament text, XIX. 835, 836.
- Hetairia**, secret Greek association, XI. 23.
- Heterobranchia**, order of crustacea, VII. 542.
- Heterobranchus**, genus of fishes, XII. 263.
- Heterocercal fishes**, XII. 209, 333; XVII. 120, 640.
- Heterocerus**, genus of insects, IX. 116.
- Heterodon**, genus of reptiles, XIX. 55.
- Heterodontes**, in zoology, XIV. 229.
- Heterognathodon**, genus of fishes, XII. 278.
- Heterogyna**, family of insects, IX. 193.
- Heteromera**, section of insects, IX. 128.
- Heteromyza**, genus of insects, IX. 255.
- Heteroneura**, genus of insects, IX. 256.
- Heteropoda**, group of crustacea, VII. 541.
- genus of birds, XVI. 804.
- order of mollusks, XV. 375.
- Heteroptera**, division of insects, IX. 161.
- Heteropygi**, family of fishes, XII. 236.
- Heterosclil**, X. 485.
- Heterotarsus**, genus of insects, IX. 131.
- Heterotis**, genus of fishes, XII. 250.
- Heterozite**, mineral, XV. 101.
- HETMAN**, XI. 363; VII. 423.
- HETTOWRA**, town of Hindustan, XI. 363.
- Heulandite**, mineral, XV. 76.
- Heusinger** on the teeth, XVI. 419.

HEV—HIE

- HEVELIUS** (John), XI. 363—opposed the application of the telescope to astronomical instruments, I. 613—his astronomical labours, III. 802—constellations added by, IV. 80—his catalogue of stars, *ib.*—on the cometary orbits, VII. 167.
- Hewet** (Andrew), VII. 482.
- Hewitson** (C. W.), his contributions to entomology, IX. 21.
- Hewson** (William), on the lymphatics, II. 766, 803, 804—on the villi of the ileum, III. 61.
- Hexagon**, X. 507, 550, 551.
- Hexagonal system** of crystallisation, XV. 45—twin crystals in, 52.
- Hexahedron** in mineralogy, XV. 41.
- HEXAMETER**, XI. 363.
- Hexanchus**, genus of fishes, XII. 324.
- HEXAPLA**, XI. 364; IV. 700—Origen’s, XVI. 715; XVIII. 266; XIX. 840.
- Hexaprotodon**, fossil mammal, XVII. 168.
- HEXASTYLE**, in architecture, XI. 364; III. 510.
- Hexatoma**, genus of insects, IX. 232.
- HEXHAM**, in Northumberland, XI. 364; XVI. 300—battle of, VIII. 691.
- Hexodon**, genus of insects, IX. 123.
- Heydenreich**, his works on insects, IX. 23.
- HEYLIN** (Peter, D.D.), XI. 364.
- HEYNE** (Christian Gottlob), XI. 364—philology promoted by, XVII. 524—his quarrel with Voss, XXI. 672—his improvement of the library at Göttingen, XIII. 420.
- on diamonds, VIII. 2, 3.
- Heysham** (Dr) parish registers kept by, XV. 605.
- HEYWOOD** (John), epigrammatist, XI. 366.
- (James), on the Lancashire coal-fields, XIII. 178.
- (Mrs), novels of, XIX. 270.
- (Thomas), dramatist, XI. 366.
- (Thomas), his description of the first English three-decker, XVI. 92; XX. 128.
- Hezekiah**, his improvement of Jerusalem, XII. 731—seems to have had no idea of a future state, I. 474, *n.* 2.
- Hezronita** (John), his translation of **Edrisi’s Geography**, VIII. 411.
- Hibbert** (Dr), on apparitions, III. 316—on vitrified forts, IX. 792—on the boulders of Shetland, VII. 723.
- HICKES** (George), XI. 366—on the philology of the Teutonic languages, XVII. 528.
- Hickory-tree**, V. 208—bark used in dyeing, VIII. 297—nut, XVI. 395.
- Hicks** (Elias), quaker, XVIII. 721.
- HIDAGE**, XI. 367.
- HIDALGO**, XI. 367.
- (Don Miguel), his proceedings in Mexico, XIV. 708—his execution, 709.
- Hides**, currying of, VII. 595—imports of, VIII. 731, 734; XIII. 311—exports of, *ib.* See **Leather**.
- HIDJELLE**, in Hindustan, XI. 367.
- Hiempsal**, XVI. 350.
- Hiendelencina** silver mines, XV. 234.
- Hieracion**, Egyptian deity, XI. 366.
- HIERAPOLIS**, in Phrygia, XI. 367.
- in Syria, XI. 367.
- Hieratic system** of writing, XI. 369, 370; VIII. 441.
- HIERAX**, bishop, XI. 367.
- Hieres**, islands. See **Hyeres**.
- HIERO I. and II.**, kings of Syracuse, XI. 367. See **Hieron**.
- HIEROCLES**, of Alatanda, XI. 367.
- of Alexandria, XI. 367.
- of Bithynia, XI. 367.
- HIEROGLYPHICS**, Egyptian, XI. 368; II. 606; VIII. 441—Young’s interpretation of, I. 900—Sir William Drummond on, VIII. 195, 196—deciphering of, XVII. 534—directions in which they are written, V. 10—effect of, on mythology, XV. 759.
- of Palenque and Copan, &c., II. 697—Mexican, 684.
- HIEROMANCY**, XI. 432.
- HIERON**, or **Hiero I.**, tyrant of Syracuse, XI. 432; XX. 899.

HIE—HIM

- HIERON II.**, king of Syracuse, XI. 432; VI. 287; XX. 900.
- Hieronimo** (Fabricio), anatomist, II. 760.
- HIERONYMUS**, king of Syracuse, XI. 432.
- HIERRO**, island, XI. 432; VI. 167—fountain-tree of, X. 845.
- HIGDEN** (Ralph), XI. 432.
- Higgins** (Godfrey), on the Pelasgi, III. 439, 440.
- (William), on chemical combination, I. 937.
- High**, different meanings of the word, VIII. 10.
- School, Edinburgh, VIII. 400.
- High-pressure steam-engine**. See **Steam-engine**.
- HIGHAM-FERRARS**, town in Northamptonshire, XI. 432.
- Highblower**, diseased horse, XXI. 571.
- HIGHGATE**, in Middlesex, XI. 432.
- Highland and Agricultural Society** of Scotland, II. 265; VIII. 398—statistics collected by, XIX. 796, 797.
- Highlands of Scotland**, XIX. 792—ponies, II. 338—cattle, 342—pigs, 355—sheep-farming in, 350—emigration from, VIII. 651—second sight in, III. 318, *n.* 1—favourable for rearing bees, IV. 587—measures for tranquillising, after the Rebellion of 1745, V. 462—state of, in the reign of James IV., XIX. 764—Highland roads and bridges, 807.
- Highmore** on the lacteals, II. 761.
- HIGHNESS**, title, XI. 432; XXI. 291.
- Highton’s telegraphic system**, XXI. 100, 102.
- (E.), his description of telegraphic instruments, XXI. 103—on Bain’s transmitting apparatus, 107.
- (Rev. H.), his telegraphic instruments, XXI. 103.
- HIGHWAYS**, XI. 432. See **Road-making**.
- HIGHWORTH**, town in Wiltshire, XI. 433.
- Hilaire** (Geoffroy de St), on the torpedo, VIII. 573—his work on insects, IX. 15—on Linnaeus’ classification of animals, XIV. 127—on the mole, 152—on the teeth of the rodents, XVI. 454 and *n.* 2.
- HILARA**, genus of insects, IX. 235.
- HILARIA**, Roman festival, XI. 433.
- HILARY**, bishop of Arles, XI. 433—Athanasian creed ascribed to, IV. 158.
- the deacon, XI. 433.
- (St), bishop of Poitiers, XI. 433.
- **TERM**, XI. 433; at Oxford, XXI. 458.
- Hildanus** (Fabricius), on surgery, XX. 818.
- HILDBURGHAUSEN**, XI. 434.
- Hildebrand** (Prof.), on the electric spark, VIII. 544.
- See **Gregory VII**.
- HILDESHEIM**, in Hanover, XI. 434, 211.
- HILL** (Aaron), XI. 434.
- (David), on the ryot-war settlement in India, XI. 526.
- (Frederick), his report on Scotch prisons, XVIII. 570.
- (John), his work on insects, IX. 4.
- (Sir John), XI. 435.
- (M.D.), on the treatment of released criminals, XVIII. 209.
- (Principal), of St Andrews, XI. 434.
- on ordination, XVI. 704—on theology, XXI. 198.
- (Rev. Rowland), XI. 435.
- (Rowland), Lord, XI. 435.
- (Rowland), his pamphlet on post-office reform, XVIII. 409—on the postal statistics of 1837, 410—his uniform penny postage adopted, 411; V. 667; XXI. 67—results of, XVIII. 412—appointed secretary to the post-office, 414.
- Hill’s method** of purifying gas, X. 418.
- HILLAH**, XI. 436; IV. 431, 432 *et seq.*; IX. 376.
- HILLEL** (Rabbi), XI. 436.
- Hilton Castle**, VIII. 287.
- Hilum**, in botany, V. 133.
- Himera**, site of, XX. 243.
- Himalaya**, steam troopship, description of, XX. 665.
- **MOUNTAINS**, XI. 436, 447; III. 731;

HIM—HIP

- XVI. 141, 143; XVII. 598—heights of, 643—sub-Himalayan flora, V. 228; XVII. 628—Moorcroft on, XI. 447—Fraser on, *ib.*, 448—Elphinstone on, 448—Captain Raper on, *ib.*—glaciers of, X. 634—snow-line on, XIV. 660—cultivation of tea among the, XXI. 81—vegetation of, V. 226—vulture of, XI. 456.
- Himantopterus**, fossils, XVII. 101.
- Himantopus**, genus of birds, XVI. 805.
- HIMERA**, Sicilian city, XI. 445; VI. 281, 282—coins of, XVI. 366.
- rivers, XI. 445.
- HIMILCO**, navigator, XI. 445.
- generals, XI. 445; VI. 283.
- Himmelfust silver mine**, XV. 235.
- Hims**, battle of, VIII. 495.
- Himyaric inscriptions**, XVII. 534.
- HINCKLEY**, in Leicester, XI. 445—population, XIII. 321.
- Hincks** (Dr), XI. 369, 409; XVII. 263, 534.
- Hind** (Mr), I. 859—his success in the discovery of small planets, 859; IV. 91—his discovery of comets, I. 859; IV. 95.
- HINDIA**, in Hindustan, XI. 445.
- Hindmarsh** (Captain), governor of South Australia, IV. 293, 294.
- Hinds**, in Berwickshire, IV. 680; Roxburghshire, XIX. 455.
- Hindsham**, island, III. 140.
- HINDU COOSH**, XI. 445; II. 201; XVII. 598, 643.
- Hindus**, XI. 473—Arabian algebra probably derived from the, II. 483—their writers on that science, 487—their mathematical knowledge, *ib.*; X. 503—architecture, III. 459, 494, 514; XI. 477—invented the denary numerals, III. 580—their character, 749; XI. 473—astronomy, III. 785—geometry, X. 503—various races of, XI. 463—Banians, IV. 414—Baniars or Batties, 508—Bazeegurs, 525—Bengali, 651—Bheels, 693—Brahmins, V. 266—castes, 267; VI. 314, 315; XI. 471; XIV. 104—difference from the Chinese, VI. 558—fakirs, IX. 472—medical profession among, XIV. 450—mythology, VII. 718; XV. 761, 762—traditions relating to the Deluge, 761—laws, XI. 476—languages, XIII. 207—calendar, VI. 353—supposed inventors of chess, 537—Jains, XII. 670—Jants, 707—of Malabar, XIV. 104—land titles among, XI. 512—trial by ordeal among, XVI. 701—college, at Calcutta, XI. 531—Sir William Jones’ service to the literature of, XIII. 4—their doctrine of the metempsychosis, XIV. 628—their pantheistic system, XVII. 229, 230—their theistic system, 229, 230—their practice of burying money, XVIII. 471—their belief in a future state, I. 463—doctrine of transmigration as held by, *ib.*—in Sindh, XX. 305—their Vedas, or sacred books, XXI. 531. See **Buddha**, **Shaster**, **Beels**, **Brahmins**, &c.
- HINDUSTAN**, XI. 446. See **India**.
- Hindustanee language**, XIII. 199, 207.
- HINGE**, XI. 532; XII. 813—in bivalve shells, XV. 342.
- Hinging of doors**, XII. 813.
- Hinglaj**, place of Hindu pilgrimage, IV. 641.
- Hinnè**, VIII. 431. See **Henna**.
- Hinnites**, fossil mollusks, XVII. 106.
- HINNOT**, XI. 532; X. 445; XII. 736.
- HRNOJOSA DEL DUGUE**, Spanish town, XI. 532.
- Hintza**, Kafarian chief, XIII. 34.
- Hinzuan**, island, XII. 789.
- Hip**, muscles of the, III. 38.
- Hip-joint**, III. 36—sprain of, in cattle, XXI. 560.
- Hippalimus**, fossil sponges, XVII. 93.
- HIPPARCHUS**, XI. 532—his contributions to astronomy, I. 598; III. 790, 791—on geography, X. 465.
- and **HIPPAS**, XI. 532, 229; IV. 197, 198.
- Hippobosca**, genus of insects, IX. 258.
- Hippocampina**, family of fishes, XII. 215.

HIP—HIT

- Hippocampus, in anatomy, III. 53.
— genus of fishes, XII. 315.
Hippocastaneæ, family of plants, V. 186.
Hippocrateæ, nat. order of plants, V. 186.
HIPPOCRATES, XI. 532; XIV. 451—not distinguished as an anatomist, II. 749—works erroneously ascribed to, ib.—on bathing, IV. 503, 504—Boerhaave's admiration of, 806—his surgical skill, XX. 810—his candour, 812, n. 2.
— of Chios, mathematician, X. 498—Lune of, XX. 520.
Hippocratic writings, II. 749; XIV. 451.
HIPPOCRENE, XI. 534, 288.
HIPPODROME, XI. 534; VI. 733.
Hippoglossus, genus of fishes, XII. 272; IX. 648, 764.
HIPPOGRYPH, XI. 534.
HIPPOLYTE (St), French town, XI. 534.
HIPPOLYTUS, XI. 534; IX. 492.
HIPPONAX, Greek satirist, XI. 534.
Hippodidum, fossil mollusks, XVII. 108.
HIPPOPOTAMUS, XI. 535; XIV. 196; II. 217—dentition of, XVI. 469—stomach, III. 108—cranium of, 77—in Egypt, VIII. 432—its ivory, III. 105; XII. 664—leather from the skins of, XIII. 305—fossil, XVII. 168, 169, 638.
Hippopus, genus of mollusks, XV. 349.
Hippuric acid, VI. 512.
Hippuris, or Mare's-tail, order of plants, V. 192.
Hippurites, fossil mollusks, XVII. 107.
Hippuritidæ, family of mollusks, XV. 349—fossil, XVII. 107.
Hiram, king of Tyre, XXI. 405.
Hirat. See Herat.
HIRE (Philippe de la), XI. 535—on magic squares, XIII. 811—on dialling, VII. 776—on micrometers, XIV. 745—on the projection of the sphere, X. 491.
Hiring by time, and by piece-work, XXI. 678.
Hirling, XII. 240.
HIRPINI, people of ancient Italy, XI. 535.
HIRSCHBERG, Prussian town, XI. 535.
Hirudines, family of annelides, XI. 303.
Hirudo, genus of annelides, XI. 303.
Hirundo, genus of birds, XVI. 757.
Hisinger on electro-chemistry, I. 968.
Hisingerite, mineral, XV. 90.
Hispa, genus of insects, IX. 148.
HISPANIA, XI. 535. See Spain.
Hispaniola. See Hayti.
HISSAR, town in Hindustan, XI. 535—sepoys insurrection at, XVI. 309.
Hister, genus of insects, IX. 113.
Histeroides, tribe of insects, IX. 113.
HISTÆA, city of Eubœa, XI. 536.
Histiopterus, genus of fishes, XII. 297, 296.
Histiopteris, genus of fishes, XII. 302, 222.
Histiotenthis, genus of mollusks, XV. 400.
HISTOLOGY, XI. 536; XIV. 463—histological physiology, XVII. 649.
Historian, qualifications of the, V. 692; XI. 546—primeval historians, 548; classical, ib.; mediæval, ib.; modern, ib.—Niebuhr on the province of, XVI. 262—historic periods in science, I. 799 *et seq.*
Historical writing and arrangement, XI. 547.
— plays, VIII. 145—geography, X. 459—painting, III. 717—argument for the existence of a God, XXI. 185.
HISTORY, XI. 536—academies of, II. 69—its distinction from annals, III. 215—obscurity of early, VI. 664—chronicles of the middle ages, VII. 535—Halles' Annals regarded by Dr Johnson as a new mode of, 634—Herder on, XI. 348—illustration it receives from coins, XVI. 351—its relations to philology, XVII. 526, 527.
— (Natural). See Natural History.
Histria. See Istria.
Hir, town of Asiatic Turkey, XI. 549—its scenery, IX. 376—its bituminous fountains, IV. 736.
Hitchcock (Dr), on fossil footprints of birds, XVII. 154.

HIT—HOD

- HITCHEN, town in Hertfordshire, XI. 549.
Hitches, in coal beds, VII. 117.
HITTITES, XI. 549; XVII. 192—their war with Egypt, VIII. 462.
Hive (Jacob), his forgery of the Book of Jasher, XII. 700.
Hives, different kinds of, III. 295, 296; IV. 586, 587—preparation of, by bees, 576—their mode of ventilating, 574—temperature of, ib.
HIVITES, XI. 549; XVII. 192.
HOADLEY (Benjamin), bishop, XI. 549.
HOANGHO, river, XI. 549; XVII. 607, 647.
Hoard (William), his rope-machine, XIX. 409.
Hoarding, analysis of the principle of, I. 382. See Avarice.
Hoare (Sir R. C.), on Abruzzo, II. 49.
Hoar-frost, VII. 765; X. 316; XIV. 653—Dr Wilson on, VII. 769.
HOBAL, Arabian idol, XI. 549.
Hobart (Lord), governor of Madras, XI. 501.
HOBART-TOWN, XI. 549; IV. 261; XXI. 31—meteorological observations at, XIV. 686.
HOBBEA (Minderhout), XI. 549.
HOBBS (Thomas), XI. 550—his philosophical, political, and ethical principles, I. 40, 41, 144 n., 332—his Leviathan, 42—Addison's opinion of his treatise on human nature, ib.—extensive influence of his writings, ib.—his style, 334—his antagonists, 43, 339; VII. 579, n. 3—Butler's answer to his opinion as to the origin of the affections, I. 298—coincidence between his followers and the Antinomians, 44—on the comparative advantages of reading and thinking, 45—his leading principles traced by Cudworth to the remains of the ancient sceptics, ib.—on the law of nations, 90, n. 1—on the origin of our knowledge, 114—his definition of liberty, 268—his early studies and works, 333—his arrogance and dogmatism, 241, 333, 334—does not distinguish between thought and feeling, 336—neither the social affections nor moral sentiments to be found in his system, 338—his low estimate of human nature agreeable to the court of Charles II., ib.—anecdote regarding his Leviathan, 241—Clarendon's opinion of him, 242—on logic, XIII. 573—on association of ideas, XIV. 596—on right and wrong, XV. 541—theory of rectitude ascribed to, 548—Clarendon's work on, XII. 67—on the source of wealth, XVIII. 225—on the quadrature of the circle, XX. 522.
Hobbs (Mr), his lock, XIII. 537, 545—on locks, 534 *et seq.*—his rudimentary treatise on, 536.
Hobby, bird, XVI. 745.
HOBGOBLIN, XI. 551.
Hobhouse (Sir John), his travels in Albania, II. 444—on the French war with Egypt, XXI. 371—on the insurrection of the janissaries, 372.
HOBLETS, XI. 551.
HOB-NOB, XI. 551.
Hobson (Capt.), consul in New Zealand, XVI. 238.
Hobson's Bay, Port Phillip, XIV. 478.
Hoccleve, poetry of, VIII. 796.
Hoccos, birds, XVI. 785.
HOCHÉ (Lazare), general, XI. 551; V. 559; X. 104; XII. 498.
Hochhuth (J. H.), his works on insects, IX. 23.
Hochkirk, battle of, XVIII. 654; XXI. 708.
Höchst, pottery of, XVIII. 436.
Hock (A.), his plan for gilding fibres, XIII. 145.
HOCK-DAY, XI. 552.
Hockhocking, river, XVI. 489.
HOCUS-FOCUS, XI. 551.
Hodeida, seaport on the Red Sea, XVIII. 818.
Hodges (Mr), on the bad effects of multiplying cottages, VII. 434.
Hodgkin on the Greek alphabet, II. 612.

HOD—HOL

- Hodgkin (Dr), on zoophytes, XXI. 975, 981.
Hodgkinson (Eaton), on the strength of pillars, I. 876; XX. 178—on the catenary curve, I. 876—his assistance in erecting the Menai tubular bridge, 877—on the strength of iron, XII. 566 *et seq.*, 591, 592; of iron columns, XX. 780—strength of timber, 171.
Hodgson (Adam), on Indian antiquities, II. 696.
— (Capt.), on the sources of the Ganges, X. 634.
— (Richard), his microscopic photographs, XIV. 801.
— (Robert), XV. 661.
HODMAN, XI. 552.
HODY (Humphry), XI. 552.
Hoe's printing machine, XVIII. 562.
Hoes (horse), II. 275.
Hoesen's burning-mirrors, VI. 11.
Hœfnagel (D. J.), his work on insects, IX. 2.
HOF, town in Bavaria, XI. 552.
HOFER (Andrew), XI. 552.
Hoffman (M.), on births and deaths in Prussia, XV. 623.
— novelist, XIX. 292.
Hoffman's polytypes, XVIII. 552.
HOFFMANN (E. Theodor Wilhelm), XI. 552.
— (FREDERICK), XI. 553.
— on the circulation of the sap in trees, V. 111.
Hoffmanswaldau, poetry of, XVIII. 118.
Hoffmeister on the earthworm, XI. 301, n. 5.
— on the embryology of plants, V. 153, 156, 157 *et seq.*
Hofwyl, M. Fellenberg's establishment at, IX. 500; XVII. 477.
HOG, XI. 553; XIV. 197; II. 335; IX. 762—dentition of, XVI. 467—times of appearance of the permanent teeth, 468—nerves of the teeth, 418—fat of, 493—American, II. 713, 714—leather from the skins of, XIII. 305.
HOGARTH (William), XI. 553; XXI. 237—his merits as a painter, III. 712, 717; XVII. 79—contours of Greek architectural mouldings conform to his line of beauty, III. 468.
HOGG (James), Ettrick shepherd, XI. 555; XXI. 877—poetry of, XVIII. 127—his visit to Tannahill, XXI. 19.
Hoggets, II. 349.
Hogging of a ship, XX. 179; XVI. 97.
HOGSHEAD, XI. 559.
HOGUE (Cape de la), XI. 559—battle of, V. 445; XI. 578; XIX. 400.
HOHENLINDEN, village in Bavaria, XI. 559—battle of, X. 120; XV. 585, 793.
HOHENZOLLERN-HECHINGEN and HOHENZOLLERN SIGMARINGEN, XI. 559; XVIII. 662.
Hohenzollern family, XVIII. 647.
Holacanthodus, genus of fossil fishes, XVII. 125.
Holacanthus, genus of fossil fishes, XII. 344.
Holaster, fossil echinoidea, XVII. 100.
HOLBACH (Paul Thyry, Baron de), XI. 559—his *Système de la Nature*, I. 181, n. 3—his connection with Diderot, VIII. 15.
HOLBEACH, in Lincolnshire, XI. 559.
HOLBEIN (Hans), XI. 559—his portrait-drawings, XIII. 390—woodcuts of the Dance of Death ascribed to, XXI. 903.
HOLBERG (Baron Ludwig), XI. 560; VII. 750; XIX. 692.
Holcus saccharatus, sugar-bearing plant, XX. 798.
Holectypus, fossil echinoidea, XVII. 100.
Holegu-Ilecou-Khan, a patron of astronomy, III. 795.
Holepta, genus of insects, IX. 113.
Holibut, fish. See Halibut.
Holiness of God, XXI. 191.
— title, XXI. 291.
HOLINSHED (Raphael), XI. 560.
HOLKAR, XI. 560, 503 *et seq.*
HOLLAND, XI. 561; IX. 399—proceedings of the Duke of Alva in, II. 642—analysis of the soil of, 394—policy in Am-

HOL—HOL

- boyna and the Banda islands, 661; IV. 410—army, III. 653—painters, 711—discoveries in New Holland, IV. 252 *et seq.*—bleaching, 758—bricks, V. 342—wars with Britain, 415, 417, 422, 426, 495—political movements in 1784, 525—invaded by the Duke of Brunswick, 526—invaded by the British in 1799, 568; X. 114—discussions in the British parliament on that expedition, V. 573—colonies, VII. 149; in the West Indies, II. 708; the Banda islands, IV. 409; Brazil, V. 282; XI. 575; Celebes, VI. 360; Ceylon, 396; Guiana, XI. 84—commerce, VII. 187; with the East Indies, III. 757; England, VIII. 732, 733; Japan, XII. 695, 698; Java, 709—commercial policy, VII. 193—sources of its commercial prosperity, 197—short credit, 198—battle of Camperdown, V. 561; X. 107; VIII. 253—drifting sands, 646, 647—fisheries, IX. 639, 648; herrings, 635, 638, 639, 641—conduct of the French towards, X. 39, 42—conquered by them in 1794, V. 554; X. 93, 94—no usury laws, XII. 431—language, XIII. 211—libraries, 422—population of, XV. 601, 602—coins, 442, 444; XVI. 389—monarchy, XV. 413—education, 818, 828—inland navigation, XVI. 55—newspapers, 202—early traffic with New York, 217—liberal treatment of foreigners, XIV. 275—rearing of florists' flowers in, XI. 751—scholars of, XVII. 524—early north-east voyages, XVIII. 165—pottery, 433—Presbyterianism, 488—railway statistics, 787—postal system, 424—rise of naval power, XX. 130—number of vessels, 138—surgeons, 818—possessions of, in Sumatra, 805, 806—stamp duties first levied in, XXI. 65—condition of the lower classes in, 49—consumption of tea in, 91—universities in, 492—weights and measures, 811—map of, XI. Plate. See Belgium.
Holland (New). See New Holland.
— (Dr), on the Ionian islands, XII. 444 *et seq.*
— (Dr), on animalcules as the cause of disease, XXI. 975.
— (Sir H.), on phrenology, XVII. 559—on mental physiology, XIV. 589, n. 1.
— (Sir John), VI. 619.
— (Lord), VIII. 242—on a peace with France in 1800, V. 570—his opposition to the union with Ireland, 572—his Life of Lope de Vega, VIII. 146—on the extravagances of the early drama, ib.
— (Mr), on the usury-laws, XII. 430.
— (Mr), Bank of Scotland projected by, XV. 483.
— (DR PHILEMON), XI. 592—his translation of Camden, VI. 116; of Livy, XIII. 527—extract from his translation of Pliny, XII. 271.
Hollands. See Gin.
Hollandus (Isaac), on sal-ammoniac, II. 720.
HOLLAR (Winceslaus), engraver, XI. 592.
Holloa, in hunting, XII. 46.
Holly, order of plants, V. 199.
— common, V. 199; XVII. 759, 760, 762—species used as tea in South America, V. 199. See Maté.
Holmes' manure distributor, II. 275.
Holocanthus, genus of fishes, XII. 302, 301.
HOLOCAUST, XI. 592.
Holocentridæ, family of fishes, XII. 279.
Holocentrum, genus of fishes, XII. 279—fossil, 343.
Holocephali, order of fishes, XII. 318—fossil, XVII. 119.
Holocystis, fossil corals, XVII. 96, 97.
HOLOGRAPH, XI. 592.
Holohedric crystals, XV. 41.
Holohepa, fossil mollusks, XVII. 110.
Holophotal system of lights, XIII. 476—its adaptation to Fresnel's apparatus, 478—condensers, 479.
Holopodius, genus of birds, XVI. 805.
Holoptychius, genus of fossil fishes, XII. 336; XVII. 123, 457; XIX. 453.

HOL—HOM

- Holoptychidae, fossil fishes, XVII. 123.
 Holosteus, genus of fossil fishes, XII. 347.
 Holostomata, fossil mollusks, XVII. 110.
 Holothuria, XXI. 985, 984—fossil, XVII. 100.
 Holothurida, XXI. 986.
 Holothuridea, XXI. 984.
 Holothuriodea, XVII. 100.
 HOLSTEIN, XI. 592; VII. 746—discontent in, after the peace of 1815, 743—in-
 vaded by Charles X. of Sweden, XX.
 852—ravaged by the Danes, 853.
 HOLT (Sir John), XI. 592.
 —in Denbighshire, XI. 593; VII. 736.
 Holwell (Mr), VI. 71; XI. 484.
 HOLY ALLIANCE, XI. 593; II. 468; VIII.
 40; XVIII. 657; XIX. 495—secession
 of Great Britain from, V. 637.
 HOLYHEAD, XI. 593—Chester and Holy-
 head Railway, IX. 664—harbour of
 refuge at, XI. 221—mail-packets, XX.
 666.
 HOLY ISLAND, XI. 593; XVI. 299.
 —in Lamlash bay, Arran, VI. 28.
 Holy Ghost, blasphemy against, IV. 754—
 office of, I. 501; XXI. 217—personality
 of, ib.—effects of his work in man, 218.
 HOLY-STONE, XI. 593.
 Holyrood, abbey of, VIII. 395, 390—sanct-
 uary of, 395.
 HOLYWELL, town in Flintshire, XI. 593;
 IX. 664.
 HOLZMINDEN, town in Brunswick, XI.
 593.
 Homacanthus, genus of fossil fishes,
 XVII. 117.
 Homaliaceae, nat. order of plants, V. 193.
 Homalopsis, genus of serpents, XIX. 59.
 Homalura, genus of insects, IX. 254.
 Homberg (William), chemist, his aræome-
 ter, III. 392.
 Homburg. See Hesse-Homburg.
 Home, (Captain), on magnetism, XIV. 15,
 56.
 —(Sir EVERARD), XI. 594—on the
 spleen, II. 802—on the nerves, 808—on
 the brain, 819—on muscular filaments,
 821—on the tongue of the giraffe, III.
 100—his work on Comparative Ana-
 tomy, II. 113—his appropriation of John
 Hunter's papers, XII. 29—on the Du-
 gong, XIV. 219—on the vampire bat,
 XVI. 452.
 —(Dr F.), on bleaching, IV. 758.
 —(HENRY), Lord Kames, XI. 593—
 his Elements of Criticism, I. 221—on
 the "hoarding instinct," 382, n.—his
 mode of improving Blair-Drummond
 moss, II. 362—on the pairing of birds,
 III. 181—on the old Roman law against
 bankrupts, VI. 740—on the recovery of
 the Pandects, 747—on Lord Stair's
 Institutes, VII. 693, n. 1—his discussion
 with Dr Doig, VIII. 91—on feudal law
 in Scotland, IX. 525, n. 10—his friend-
 ship towards Smellie, XX. 336—Tytler's
 life of, XXI. 411.
 —(JOHN), author of Douglas, XI.
 594; IX. 511—his tragedy of Douglas,
 VIII. 166; XIX. 230.
 HOMER, XI. 594—were letters known in
 his time? III. 617—Alamanni's notes
 on, II. 438—Bryant's opinions concern-
 ing, V. 706—Dr Clarke's translation of
 the Iliad, VI. 758—Eustathius' Com-
 mentaries on, IX. 405—his notices of
 the Ionian Islands, XII. 451, 454—
 Foulis' edition of, XV. 526—his descrip-
 tion of the horse, XI. 633—his imper-
 fect distinction between morality and
 law, XIII. 259—criticisms on, XX. 86,
 n. 1—MS. of Iliad, XXI. 589—transla-
 tions of, into English, V. 678; VII. 473;
 VI. 416; XI. 550; XVIII. 325, 330, 331;
 French, XII. 685; VI. 615; Italian,
 389; XV. 519; Icelandic, XII. 199;
 German, XX. 708—palimpsest of the
 Iliad, XVII. 214—fragment of, on pa-
 pyrus, 265—poetry of, XVIII. 92, 95,
 97, 99, 100, 101—Homeric hymns, 102—
 Homeric Greek, 325—comparison be-
 tween him and Spenser, XX. 507—Voss's
 editions of, XXI. 672.

HOM—HOO

- HOMER or Omer, a Jewish measure, XI.
 604; VII. 421.
 HOMICIDE, XI. 604; XIV. 429; XV. 567
 —its punishment in China, VI. 566—
 homicidal mania, XIV. 533.
 Homildown, battle of, VI. 616—archers
 present at, III. 425.
 HOMILY, XI. 606.
 Homobranchia, order of crustacea, VII.
 540.
 Homocercal fishes, XII. 209, 333; XVII.
 126, 640.
 HOMŒOPATHY, XI. 606—In the treatment of
 live stock, II. 358—number of homœo-
 pathists in United Kingdom, XIV. 465.
 See Hahnemann.
 Homologies of the mollusks, XV. 324—of
 the teeth, XVI. 478—promoted by
 palæontology, XVII. 91.
 Homologous series, in organic chemistry,
 VI. 505.
 HOMONYMS, XI. 608.
 HOMŒOUSIANS, XI. 608.
 Homoptera, insects, IX. 166.
 Honain, translator, XIV. 456.
 HONDEKOETER (Melchior), XI. 608.
 HONDURAS, British, XI. 609.
 —state of Central America, XI. 611.
 HONE, or Hone-slate, XI. 614; VII. 601.
 —(WILLIAM), XI. 614.
 Honey, IX. 765—used for preserving
 fruits, 767—of Hymettus, XII. 188—of
 Hybla, XX. 244—ants fond of, III. 264
 —used to form lenses, XIV. 769—specific
 gravity of, XII. 89—dead embalmed
 with, IV. 347—polarisation of, XVI.
 681—occasionally poisonous, XIV. 439.
 See Apilary, Bee.
 Honey-bees, IX. 203; IV. 570.
 Honey-buzzard, bird, XVI. 774.
 Honey-combs, IV. 577—Buffon's theory of
 their formation, 578—durability of, 583
 —construction of, XII. 391.
 Honey-dew, IV. 572; IX. 171, n. 2.
 Honey-guides, birds, XVI. 778; II. 218.
 Honey-hawks, XVI. 744.
 Honey-soap, XX. 366.
 Honey-stone, XV. 125.
 Honeysuckle, order of plants, V. 195;
 XVII. 764.
 —ornament in Greek architecture,
 III. 468—derived from Assyria, 501.
 HONFLEUR, French seaport, XI. 615.
 HONG KONG, island, XI. 615—ceded to
 Britain, V. 669; VI. 597—silver ex-
 ported from England to, XVIII. 472.
 HONITON, in Devonshire, XI. 615—lace,
 XIII. 142.
 HONOLULU, in the Sandwich islands, XI.
 615; XVIII. 272, 273.
 HONORIUS (Flavius), Roman emperor, XI.
 616; VII. 311.
 —I., II., IV. (Popes), XI. 616.
 —III. (Pope), XI. 616—his persecu-
 tion of the Albigenses, XII. 387.
 HONOUR (Legion of), XI. 616; XIII. 114,
 120, 122; X. 280.
 —remarks on the law of, I. 391;
 VIII. 232.
 HONOURABLE, XI. 616.
 Honours, academical, XXI. 458, 463, 467
 et seq.
 Hood (Alexander), XI. 617.
 —(Charles), on the structure of iron,
 XII. 570.
 —(Lieut.), on aurora borealis in
 North America, IV. 244, 249.
 —(Mr), on hot-house furnaces, and
 heating with hot-water, XI. 720, 721.
 —(ROBIN), XI. 616; XII. 49.
 —(SAMUEL), viscount, XI. 617; V. 496.
 —(Sir Samuel), XI. 617; V. 500.
 —(THOMAS), poet, XI. 617.
 —in falconry, XI. 248.
 Hooded snake, XIX. 64.
 Hoofed animals, II. 774.
 Hoofman (Elizabeth), Dutch authoress, XI.
 591.
 HOOFT (Peter Cornelius), XI. 618.
 HOOGEVEEN (Heinrich), XI. 619.
 HOOGLY, town and district in Bengal,
 XI. 619; IV. 651.
 —river, XI. 619; X. 400.

HOO—HOR

- Hooght's (Van der), Hebrew Bible, IV.
 697.
 Hook, fishing, III. 150, 158.
 —(Dr), his camera lucida, VI. 117—
 on capillary attraction, XII. 96—on the
 deflection of rays of light, VII. 694.
 —(THEODORE EDWARD), XI. 620—his
 novels, XIX. 283.
 HOOKAH, XI. 620.
 HOOKE (Nathaniel), XI. 620.
 —ROBERT, XI. 620—his opposition
 to the optical discoveries of Newton,
 I. 667—his jealousy and illiberality,
 595—on the earth's annual motion, II.
 36—on Jupiter's belts, IV. 69—his prin-
 ciple of arches, III. 402—on gravitation,
 IV. 221; I. 675—on pneumatics, IV.
 453—his barometer, 454—inventor of
 the anchor escapement, VII. 8—his
 improvements in clocks, 3—his watch-
 springs, I. 595—on light, 895—on the
 teeth of wheels, XIV. 396, 397—on
 magnetism, 3—his universal joint, 399
 his micrometer, 743—on optics, XVI.
 533, 598, 599—his air-pump, XVIII. 34
 —his discovery of a law of nature, *ut*
tensio sic vis, XX. 751—on the strength
 of materials, 763—on the thermometer,
 XXI. 221.
 HOOKER (John), XI. 620.
 —(Dr Joseph D.), on the Himalayan
 glaciers, X. 634—on the botany of the
 Auckland islands, IV. 268—on the Hima-
 layas, XI. 438—on the preparation of
 opium, XVI. 518.
 —(RICHARD), XI. 621—on the law of
 nature, XIII. 254—on virtue, XV. 563.
 —(Sir William), his improvements in
 Kew gardens, XIII. 75—on antarctic
 plants, XVII. 625.
 HOOLE (John), XI. 622.
 Hoon, town in Fezzan, IX. 528.
 Hoop-nets, XIX. 92.
 HOOPER (John), bishop, XI. 622.
 HOOFING-COUGH, XI. 622.
 Hoopoes, birds, XVI. 771; VIII. 433.
 HOORN, in Holland, XI. 622.
 HOP, plant, XI. 622; V. 206—culture of,
 II. 333—use of hops in brewing, V. 324
 —their qualities, ib.—of Herefordshire,
 XI. 349—of Canada, VI. 147—of Kent,
 XIII. 66—excise duties on, XXI. 59.
 Hope, XIV. 576; XVII. 563.
 —(Cape of Good). See Good Hope.
 —(F. W.), his works on insects, IX.
 20.
 —(Lord Justice-Clerk), on the right
 of salmon-fishing on the sea coast, IX.
 601, n. 2.
 —(THOMAS), XI. 622—his Anastasius,
 XIX. 282.
 —(THOMAS CHARLES), M.D., XI. 623
 —on the maximum density point of
 water, I. 941.
 Hopeite, mineral, XV. 93.
 HÔPITAL (G. F. Antoine), Marquis de l',
 XI. 623—his work on the calculus, I.
 646.
 —or HOSPITAL (MICHEL DE L'), XI.
 624.
 —(W.), on fractures in the earth's
 crust, XV. 177—on the thickness of the
 earth's crust, 184, n.
 HOPKINS (Ezekiel), bishop, XI. 625.
 Hopkinson's printing machine, XVIII. 562.
 Hoplegnathus, genus of fishes, XII. 303,
 223.
 Hoplia, genus of insects, IX. 126.
 Hoplides, group of insects, IX. 125.
 Hoplopteryx, genus of fossil fishes, XII.
 343.
 Hoplopygus, genus of fossil fishes, XII.
 336; XVII. 125.
 Hoppe (David Henry), his works on in-
 sects, IX. 8.
 HOR, mount, XI. 626; XII. 359.
 HORAPOLLO, XI. 626, 375, 381; II. 608.
 HORATH, XI. 626.
 Horatius Cocles. See Cocles.
 —FLACCUS (Q.), Roman poet, XI.
 626—Pine's edition of, IV. 707—Cun-
 ningham's edition of, VII. 586, 587—
 Bentley's emendations of, 586—Bur-

HOR—HOR

- man's edition of, V. 786—on field-sports,
 XII. 33—his obligations to Mæcenas,
 XIII. 807—his verses on Pindar, XVII.
 711—poetry of, XVIII. 105—friendship
 between him and Virgil, XXI. 595.
 Hore (H. Francis), on Irish fisheries, IX.
 618, 629.
 Horeb (mount), height of, XVII. 644.
 Horestii, Caledonian tribe, VI. 74.
 Horia, genus of insects, IX. 134.
 Horiales, tribe of insects, IX. 134.
 HORIZON, XI. 630; IV. 1—sensible and
 rational, IV. 5; X. 480.
 Horizontal water-wheels, XII. 168—steam-
 engines, XX. 608.
 Hormisdas, king of Persia, XVII. 436.
 Hormuz, XVI. 724.
 HORN of animals, XI. 630; XIV. 203—use
 of, as manure, II. 407.
 —musical instrument, XI. 631; XV.
 711—English, 710—French, XI. 631.
 —or Hoorn (Cape), XI. 631—dis-
 covery of, XVII. 336.
 —(Count), XI. 563 et seq.
 —(Van), bucanier, V. 711.
 Hornbeam tree, XVII. 758, 765—as timber,
 XXI. 278.
 Hornbearers, order of, XIII. 122.
 Hornbills, birds, XVI. 773.
 Hornblende, XV. 80, 81—rock, 135—analy-
 sis of, II. 390—specific gravity of, XII.
 88.
 —schist, XV. 154.
 Hornblower (Mr), steam-engine valves in-
 vented by, XX. 603—beam of his engine,
 VI. 267.
 HORNCastle, in Lincolnshire, XI. 631—
 fair at, IX. 468.
 Horn-cobalt, XV. 112.
 HORNE (George), bishop, XI. 631—his In-
 troduction, &c., XIX. 829 et seq.
 —(T. H.), his work on bibliography,
 IV. 716; XIII. 378—on the Mentz
 Psalter, XVIII. 530.
 Hornemann, his expedition to Africa, II.
 210.
 HORNER (Francis), XI. 631—on Machiavel,
 I. 236—estimate of his character, 237,
 403, n. 1—on the currency, IX. 439.
 Hornet, IX. 198—an enemy to bees, IV.
 585.
 Horning, in Scotch law, XII. 365.
 Hornsilver, XV. 107.
 Hornstone, XV. 69.
 Hornung's blue ink, XII. 383.
 Hornwort, order of plants, V. 206.
 HORROCK's (Jeremiah), XI. 632—observed
 the first transit of Venus in 1639, I. 611
 —among the first who appreciated the
 discoveries of Kepler, ib.—died young,
 but left behind him matter which
 Newton adopted, ib.
 Horsa, V. 381—ships of, XX. 118.
 Horsburgh's barometrical plates, IV. 458.
 Horse, XI. 632; II. 337; XIV. 200—denti-
 tion of, XVI. 410, 412, 470; III. 107—
 fat of, XVI. 497—race-horse, XI. 633—
 hunter, 645—saddle, II. 337—dray, ib.
 —hackney, XI. 652, 662—charger, 656
 —troop-horse, 657—coach-horse, 658—
 gig-horse, 660—post-horse, ib.—cart-
 horse, 661; II. 338—Clydesdale horses,
 338; XI. 662—of America, II. 714—
 Indian tribes that make use of, 693
 —of Arabia, III. 345—of Hungary, XII.
 17—Asia, III. 740—Beykaneer, IV. 691—
 Brazil, V. 294—Buenos Ayres, 726—
 Chile, VI. 549—Derbyshire, VII. 755—
 Down, VIII. 123—Egypt, 432—England,
 723—France, X. 248—Germany, 586—
 Greece, XI. 17—New South Wales, IV.
 280—Ireland, XI. 662—Jamaica, XII.
 682—Japan, 689—Lincolnshire, XIII.
 491—Morocco, XV. 594—India, XI. 455
 —Norway, XVI. 324—Palestine, XVII.
 191—Persia, 423—Prussia, XVIII. 665—
 Scotland, XI. 662; XIX. 798—Tangutan,
 or Bootan, V. 34—Spain, XX. 489—
 breeds of the, II. 337—breeding and
 rearing, 338—feeding, 339, 340—affec-
 tionately treated by the Arabs, III. 346
 —bots in, IX. 247; XXI. 569—vocal
 organs of, III. 101—small brain of, 178

HIP—HIT

- Hippocampus, in anatomy, III. 53.
— genus of fishes, XII. 315.
Hippocastaneæ, family of plants, V. 186.
Hippocrateæ, nat. order of plants, V. 186.
HIPPOCRATES, XI. 532; XIV. 451—not distinguished as an anatomist, II. 749—works erroneously ascribed to, ib.—on bathing, IV. 503, 504—Boerhaave's admiration of, 806—his surgical skill, XX. 810—his candour, 812, n. 2.
— of Chios, mathematician, X. 498—Lune of, XX. 520.
Hippocratic writings, II. 749; XIV. 451.
HIPPOCRENE, XI. 534, 288.
HIPPODROME, XI. 534; VI. 733.
Hippoglossus, genus of fishes, XII. 272; IX. 648, 764.
HIPPOGRYPH, XI. 534.
HIPPOLYTE (St), French town, XI. 534.
HIPPOLYTUS, XI. 534; IX. 492.
HIPPOXAX, Greek satirist, XI. 534.
Hippopodium, fossil mollusks, XVII. 108.
HIPPOPOTAMUS, XI. 535; XIV. 196; II. 217—dentition of, XVI. 469—stomach, III. 108—cranium of, 77—in Egypt, VIII. 432—its ivory, III. 105; XII. 664—leather from the skins of, XIII. 305—fossil, XVII. 168, 169, 638.
Hippopus, genus of mollusks, XV. 349.
Hippuric acid, VI. 512.
Hippuris, or Mare's-tail, order of plants, V. 192.
Hippurites, fossil mollusks, XVII. 107.
Hippuritidæ, family of mollusks, XV. 349—fossil, XVII. 107.
Hiram, king of Tyre, XXI. 405.
Hirat. See Herat.
HIRE (Philippe de la), XI. 535—on magic squares, XIII. 811—on dialling, VII. 776—on micrometers, XIV. 745—on the projection of the sphere, X. 491.
Hiring by time, and by piece-work, XXI. 678.
Hirling, XII. 240.
HIRPINI, people of ancient Italy, XI. 535.
HIRSCHBERG, Prussian town, XI. 535.
Hirudines, family of annelides, XI. 303.
Hirudo, genus of annelides, XI. 303.
Hirundo, genus of birds, XVI. 757.
Hisinger on electro-chemistry, I. 968.
Hisingerite, mineral, XV. 90.
Hispa, genus of insects, IX. 148.
HISPANIA, XI. 535. See Spain.
Hispaniola. See Hayti.
HISSAR, town in Hindustan, XI. 535—sepoj insurrection at, XVI. 309.
Hister, genus of insects, IX. 113.
Histeroides, tribe of insects, IX. 113.
HISTILÆA, city of Eubœa, XI. 536.
Histiopterus, genus of fishes, XII. 297, 296.
Histiopterus, genus of fishes, XII. 302, 222.
Histiotethis, genus of mollusks, XV. 400.
HISTOLOGY, XI. 536; XIV. 463—histological physiology, XVII. 649.
Historian, qualifications of the, V. 692; XI. 546—primeval historians, 548; classical, ib.; mediæval, ib.; modern, ib.—Niebuhr on the province of, XVI. 262—historic periods in science, I. 799 *et seq.*
Historical writing and arrangement, XI. 547.
— plays, VIII. 145—geography, X. 459—painting, III. 717—argument for the existence of a God, XXI. 185.
HISTORY, XI. 536—academies of, II. 69—its distinction from annals, III. 215—obscurity of early, VI. 664—chronicles of the middle ages, VII. 535—Hall's Annals regarded by Dr Johnson as a new mode of, 634—Herder on, XI. 348—illustration it receives from coins, XVI. 351—its relations to philology, XVII. 526, 527.
— (Natural). See Natural History.
Histria. See Istria.
Hrr, town of Asiatic Turkey, XI. 549—its scenery, IX. 376—its bituminous fountains, IV. 736.
Hitchcock (Dr), on fossil footprints of birds, XVII. 154.

HIT—HOD

- HITCHEN, town in Hertfordshire, XI. 549.
Hitches, in coal beds, VII. 117.
HITTITES, XI. 549; XVII. 192—their war with Egypt, VIII. 462.
Hive (Jacob), his forgery of the Book of Jasher, XII. 700.
Hives, different kinds of, III. 295, 296; IV. 586, 587—preparation of, by bees, 576—their mode of ventilating, 574—temperature of, ib.
HIVITES, XI. 549; XVII. 192.
HOADLEY (Benjamin), bishop, XI. 549.
HOANGHO, river, XI. 549; XVII. 607, 647.
Hoard (William), his rope-machine, XIX. 409.
Hoarding, analysis of the principle of, I. 382. See Avarice.
Hoare (Sir R. C.), on Abruzzo, II. 49.
Hoar-frost, VII. 765; X. 316; XIV. 653—Dr Wilson on, VII. 769.
HOBAL, Arabian idol, XI. 549.
Hobart (Lord), governor of Madras, XI. 501.
HOBART-TOWN, XI. 549; IV. 261; XXI. 31—meteorological observations at, XIV. 686.
HOBBEEMA (Minderhout), XI. 549.
HOBBS (Thomas), XI. 550—his philosophical, political, and ethical principles, I. 40, 41, 144 n., 332—his Leviathan, 42—Addison's opinion of his treatise on human nature, ib.—extensive influence of his writings, ib.—his style, 334—his antagonists, 43, 339; VII. 579, n. 3—Butler's answer to his opinion as to the origin of the affections, I. 298—coincidence between his followers and the Antinomians, 44—on the comparative advantages of reading and thinking, 45—his leading principles traced by Cudworth to the remains of the ancient sceptics, ib.—on the law of nations, 90, n. 1—on the origin of our knowledge, 114—his definition of liberty, 268—his early studies and works, 333—his arrogance and dogmatism, 241, 333, 334—does not distinguish between thought and feeling, 336—neither the social affections nor moral sentiments to be found in his system, 338—his low estimate of human nature agreeable to the court of Charles II., ib.—anecdote regarding his Leviathan, 241—Clarendon's opinion of him, 242—on logic, XIII. 573—on association of ideas, XIV. 596—on right and wrong, XV. 541—theory of rectitude ascribed to, 548—Clarendon's work on, XII. 67—on the source of wealth, XVIII. 225—on the quadrature of the circle, XX. 522.
Hobbs (Mr), his lock, XIII. 537, 545—on locks, 534 *et seq.*—his rudimentary treatise on, 536.
Hobby, bird, XVI. 745.
HOBGOBLIN, XI. 551.
Hobhouse (Sir John), his travels in Albania, II. 444—on the French war with Egypt, XXI. 371—on the insurrection of the janissaries, 372.
HOBLETS, XI. 551.
HOB-NOB, XI. 551.
Hobson (Capt.), consul in New Zealand, XVI. 238.
Hobson's Bay, Port Phillip, XIV. 478.
Hoccleve, poetry of, VIII. 796.
Hoccos, birds, XVI. 785.
HOCHE (Lazare), general, XI. 551; V. 559; X. 104; XII. 498.
Hochhuth (J. H.), his works on insects, IX. 23.
Hochkirk, battle of, XVIII. 654; XXI. 708.
Höchst, pottery of, XVIII. 436.
Hock (A.), his plan for gilding fibres, XIII. 145.
HOCK-DAY, XI. 552.
Hockhocking, river, XVI. 489.
HOCUS-FOCUS, XI. 551.
Hodeida, seaport on the Red Sea, XVIII. 818.
Hodges (Mr), on the bad effects of multiplying cottages, VII. 434.
Hodgkin on the Greek alphabet, II. 612.

HOD—HOL

- Hodgkin (Dr), on zoophytes, XXI. 975, 981.
Hodgkinson (Eaton), on the strength of pillars, I. 876; XX. 178—on the catenary curve, I. 876—his assistance in erecting the Menai tubular bridge, 877—on the strength of iron, XII. 566 *et seq.*, 591, 592; of iron columns, XX. 780—strength of timber, 171.
Hodgson (Adam), on Indian antiquities, II. 696.
— (Capt.), on the sources of the Ganges, X. 634.
— (Richard), his microscopic photographs, XIV. 801.
— (Robert), XV. 661.
HODMAN, XI. 552.
HODY (Humphry), XI. 552.
Hoe's printing machine, XVIII. 562.
Hoes (horse), II. 275.
Hoesen's burning-mirrors, VI. 11.
Hœfnagel (D. J.), his work on insects, IX. 2.
HOF, town in Bavaria, XI. 552.
HOFER (Andrew), XI. 552.
Hoffman (M.), on births and deaths in Prussia, XV. 623.
— novelist, XIX. 292.
Hoffman's polytypes, XVIII. 552.
HOFFMANN (E. Theodor Wilhelm), XI. 552.
— (FREDERICK), XI. 553.
— on the circulation of the sap in trees, V. 111.
Hoffmanswaldau, poetry of, XVIII. 118.
Hoffmeister on the earthworm, XI. 301, n. 5.
— on the embryology of plants, V. 153, 156, 157 *et seq.*
Hofwyl, M. Fellenberg's establishment at, IX. 500; XVII. 477.
Hog, XI. 553; XIV. 197; II. 335; IX. 762—dentition of, XVI. 467—times of appearance of the permanent teeth, 468—nerves of the teeth, 418—fat of, 493—American, II. 713, 714—leather from the skins of, XIII. 305.
HOGARTH (William), XI. 553; XXI. 237—his merits as a painter, III. 712, 717; XVII. 79—contours of Greek architectural mouldings conform to his line of beauty, III. 468.
HOGG (James), Ettrick shepherd, XI. 555; XXI. 877—poetry of, XVIII. 127—his visit to Tannahill, XXI. 19.
Hoggets, II. 349.
Hogging of a ship, XX. 179; XVI. 97.
HOGSHEAD, XI. 559.
HOGUE (Cape de la), XI. 559—battle of, V. 445; XI. 578; XIX. 400.
HOHENLINDEN, village in Bavaria, XI. 559—battle of, X. 120; XV. 585, 793.
HOHENZOLLERN-HECHINGEN and HOHENZOLLERN SIGMARINGEN, XI. 559; XVIII. 662.
Hohenzollern family, XVIII. 647.
Holacanthodus, genus of fossil fishes, XVII. 125.
Holacanthus, genus of fossil fishes, XII. 344.
Holaster, fossil echinoidea, XVII. 100.
HOLBACH (Paul Thyry, Baron de), XI. 559—his *Système de la Nature*, I. 181, n. 3—his connection with Diderot, VIII. 15.
HOLBEACH, in Lincolnshire, XI. 559.
HOLBEIN (Hans), XI. 559—his portrait-drawings, XIII. 390—woodcuts of the Dance of Death ascribed to, XXI. 903.
HOLBERG (Baron Ludwig), XI. 560; VII. 750; XIX. 692.
Holcus saccharatus, sugar-bearing plant, XX. 798.
Holectypus, fossil echinoidea, XVII. 100.
Holegu-Ilecon-Khan, a patron of astronomy, III. 795.
Holepta, genus of insects, IX. 113.
Holibut, fish. See Halibut.
Holiness of God, XXI. 191.
— title, XXI. 291.
HOLINSHED (Raphael), XI. 560.
HOLKAR, XI. 560, 503 *et seq.*
HOLLAND, XI. 561; IX. 399—proceedings of the Duke of Alva in, II. 642—analysis of the soil of, 394—policy in Am-

HOL—HOL

- boyna and the Banda islands, 661; IV. 410—army, III. 653—painters, 711—discoveries in New Holland, IV. 252 *et seq.*—bleaching, 758—bricks, V. 342—wars with Britain, 415, 417, 422, 426, 495—political movements in 1784, 525—invaded by the Duke of Brunswick, 526—invaded by the British in 1799, 568; X. 114—discussions in the British parliament on that expedition, V. 573—colonies, VII. 149; in the West Indies, II. 708; the Banda islands, IV. 409; Brazil, V. 282; XI. 575; Celebes, VI. 360; Ceylon, 396; Guiana, XI. 84—commerce, VII. 187; with the East Indies, III. 757; England, VIII. 732, 733; Japan, XII. 695, 698; Java, 709—commercial policy, VII. 193—sources of its commercial prosperity, 197—short credit, 198—battle of Camperdown, V. 561; X. 107; VIII. 253—drifting sands, 646, 647—fisheries, IX. 639, 648; herrings, 635, 638, 639, 641—conduct of the French towards, X. 39, 42—conquered by them in 1794, V. 554; X. 93, 94—no usury laws, XII. 431—language, XIII. 211—libraries, 422—population of, XV. 601, 602—coins, 442, 444; XVI. 389—monarchy, XV. 413—education, 818, 828—inland navigation, XVI. 55—newspapers, 202—early traffic with New York, 217—liberal treatment of foreigners, XIV. 275—rearing of florists' flowers in, XI. 751—scholars of, XVII. 524—early north-east voyages, XVIII. 165—pottery, 433—Presbyterianism, 488—railway statistics, 787—postal system, 424—rise of naval power, XX. 130—number of vessels, 138—surgeons, 818—possessions of, in Sumatra, 805, 806—stamp duties first levied in, XXI. 65—condition of the lower classes in, 49—consumption of tea in, 91—universities in, 492—weights and measures, 811—map of, XI. Plate. See Belgium.
Holland (New). See New Holland.
— (Dr), on the Ionian islands, XII. 444 *et seq.*
— (Dr), on animalcules as the cause of disease, XXI. 975.
— (Sir H.), on phrenology, XVII. 559—on mental physiology, XIV. 589, n. 1.
— (Sir John), VI. 619.
— (Lord), VIII. 242—on a peace with France in 1800, V. 570—his opposition to the union with Ireland, 572—his *Life of Lope de Vega*, VIII. 146—on the extravagances of the early drama, ib.
— (Mr), on the usury-laws, XII. 430.
— (Mr), Bank of Scotland projected by, XV. 483.
— (DR PHILEMON), XI. 592—his translation of Camden, VI. 116; of Livy, XIII. 527—extract from his translation of Pliny, XII. 271.
Hollands. See Gin.
Hollandus (Isaac), on sal-ammoniac, II. 720.
HOLLAR (Winceslaus), engraver, XI. 592.
Holloa, in hunting, XII. 46.
Holly, order of plants, V. 199.
— common, V. 199; XVII. 759, 760, 762—species used as tea in South America, V. 199. See Maté.
Holmes' manure distributor, II. 275.
Holocanthus, genus of fishes, XII. 302, 301.
HOLOCAUST, XI. 592.
Holocentridæ, family of fishes, XII. 279.
Holocentrum, genus of fishes, XII. 279—fossil, 343.
Holocephali, order of fishes, XII. 318—fossil, XVII. 119.
Holocystis, fossil corals, XVII. 96, 97.
HOLOGRAPH, XI. 592.
Holoedric crystals, XV. 41.
Holoepa, fossil mollusks, XVII. 110.
Holophotal system of lights, XIII. 476—its adaptation to Fresnel's apparatus, 478—condensers, 479.
Holopodium, genus of birds, XVI. 805.
Holoptychius, genus of fossil fishes, XII. 336; XVII. 123, 457; XIX. 453.

HOL—HOM

Holopterygidae, fossil fishes, XVII. 123.
 Holosteus, genus of fossil fishes, XII. 347.
 Holostomata, fossil mollusks, XVII. 110.
 Holothuria, XXI. 985, 984—fossil, XVII. 100.
 Holothurida, XXI. 986.
 Holothuridea, XXI. 984.
 Holothurioidea, XVII. 100.
 HOLSTEIN, XI. 592; VII. 746—discontent in, after the peace of 1815, 743—in- vaded by Charles X. of Sweden, XX. 852—ravaged by the Danes, 853.
 Holt (Sir John), XI. 592.
 —in Denbighshire, XI. 593; VII. 736.
 Holwell (Mr.), VI. 71; XI. 484.
 HOLY ALLIANCE, XI. 593; II. 468; VIII. 40; XVIII. 657; XIX. 495—secession of Great Britain from, V. 637.
 HOLYHEAD, XI. 593—Chester and Holy- head Railway, IX. 664—harbour of refuge at, XI. 221—mail-packets, XX. 666.
 HOLY ISLAND, XI. 593; XVI. 299.
 —in Lamlash bay, Arran, VI. 28.
 Holy Ghost, blasphemy against, IV. 754— office of, I. 501; XXI. 217—personality of, ib.—effects of his work in man, 218.
 HOLY-STONE, XI. 593.
 Holyrood, abbey of, VIII. 395, 390—sanctuary of, 395.
 HOLIWELL, town in Flintshire, XI. 593; IX. 664.
 HOLZMINDEN, town in Brunswick, XI. 593.
 Homacanthus, genus of fossil fishes, XVII. 117.
 Homalaceæ, nat. order of plants, V. 193.
 Homalopsis, genus of serpents, XIX. 59.
 Homalura, genus of insects, IX. 254.
 Homberg (William), chemist, his aræome- ter, III. 392.
 Homburg. See Hesse-Homburg.
 Home, (Captain), on magnetism, XIV. 15, 56.
 —(Sir EVERARD), XI. 594—on the spleen, II. 802—on the nerves, 808—on the brain, 819—on muscular filaments, 821—on the tongue of the giraffe, III. 100—his work on Comparative Ana- tomy, II. 113—his appropriation of John Hunter's papers, XII. 29—on the Du- gong, XIV. 219—on the vampire bat, XVI. 452.
 —(Dr F.), on bleaching, IV. 758.
 —(HENRY), Lord Kames, XI. 593— his Elements of Criticism, I. 221—on the "hoarding instinct," 382, n.—his mode of improving Blair-Drummond moss, II. 362—on the pairing of birds, III. 181—on the old Roman law against bankrupts, VI. 740—on the recovery of the Pandects, 747—on Lord Stair's Institutes, VII. 633, n. 1—his discussion with Dr Doig, VIII. 91—on feudal law in Scotland, IX. 525, n. 10—his friend- ship towards Smellie, XX. 336—Tytler's life of, XXI. 411.
 —(JOHN), author of Douglas, XI. 594; IX. 511—his tragedy of Douglas, VIII. 166; XIX. 230.
 HOMER, XI. 594—were letters known in his time? III. 617—Alamanni's notes on, II. 438—Bryant's opinions concern- ing, V. 706—Dr Clarke's translation of the Iliad, VI. 758—Eustathius' Com- mentaries on, IX. 405—his notices of the Ionian Islands, XII. 451, 454—Foulis' edition of, XV. 526—his descrip- tion of the horse, XI. 633—his imper- fect distinction between morality and law, XIII. 259—criticisms on, XX. 86, n. 1—MS. of Iliad, XXI. 589—transla- tions of, into English, V. 678; VII. 473; VI. 416; XI. 550; XVIII. 325, 330, 331; French, XII. 685; VI. 615; Italian, 389; XV. 519; Icelandic, XII. 199; German, XX. 708—palimpsest of the Iliad, XVII. 214—fragment of, on py- rous, 265—poetry of, XVIII. 92, 95, 97, 99, 100, 101—Homeric hymns, 102— Homeric Greek, 325—comparison be- tween him and Spenser, XX. 507—Voss's editions of, XXI. 672.

HOM—HOO

HOMER or Omer, a Jewish measure, XI. 604; VII. 421.
 HOMICIDE, XI. 604; XIV. 429; XV. 567 —its punishment in China, VI. 566— homicidal mania, XIV. 533.
 Homildown, battle of, VI. 616—archers present at, III. 425.
 HOMILY, XI. 606.
 Homobranchia, order of crustacea, VII. 540.
 Homocercal fishes, XII. 209, 333; XVII. 126, 640.
 HOMOPATHY, XI. 606—in the treatment of live stock, II. 358—number of homœo- pathists in United Kingdom, XIV. 465. See Hahnemann.
 Homologies of the mollusks, XV. 324—of the teeth, XVI. 478—promoted by palæontology, XVII. 91.
 Homologous series, in organic chemistry, VI. 505.
 HOMONYMS, XI. 608.
 HOMOCOUSANS, XI. 608.
 Homoptera, insects, IX. 166.
 Honain, translator, XIV. 456.
 HONDEKOETER (Melchior), XI. 608.
 HONDURAS, British, XI. 609.
 —state of Central America, XI. 611.
 HONE, or Hone-slate, XI. 614; VII. 601.
 —(WILLIAM), XI. 614.
 Honey, IX. 765—used for preserving fruits, 767—of Hymettus, XII. 188—of Hybla, XX. 244—ants fond of, III. 264—used to form lenses, XIV. 769—specific gravity of, XII. 89—dead embalmed with, IV. 347—polarisation of, XVI. 681—occasionally poisonous, XIV. 439. See Apiary, Bee.
 Honey-bees, IX. 203; IV. 570.
 Honey-buzzard, bird, XVI. 774.
 Honey-combs, IV. 577—Buffon's theory of their formation, 578—durability of, 583—construction of, XII. 391.
 Honey-dew, IV. 572; IX. 171, n. 2.
 Honey-guides, birds, XVI. 778; II. 218.
 Honey-hawks, XVI. 744.
 Honey-soap, XX. 366.
 Honey-stone, XV. 125.
 Honeysuckle, order of plants, V. 195; XVII. 764.
 —ornament in Greek architecture, III. 468—derived from Assyria, 501.
 HONFLEUR, French seaport, XI. 615.
 HONG KONG, island, XI. 615—ceded to Britain, V. 669; VI. 597—silver ex- ported from England to, XVIII. 472.
 HONITON, in Devonshire, XI. 615—lace, XIII. 142.
 HONOLULU, in the Sandwich islands, XI. 615; XVIII. 272, 273.
 HONORIUS (Flavius), Roman emperor, XI. 616; VII. 311.
 —I., II., IV. (Popes), XI. 616.
 —III. (Pope), XI. 616—his persecu- tion of the Albigenses, XII. 387.
 HONOUR (Legion of), XI. 616; XIII. 114, 120, 122; X. 280.
 —remarks on the law of, I. 391; VIII. 232.
 HONOURABLE, XI. 616.
 Honours, academical, XXI. 458, 463, 467 et seq.
 Hood (Alexander), XI. 617.
 —(Charles), on the structure of iron, XII. 570.
 —(Lieut.), on aurora borealis in North America, IV. 244, 249.
 —(Mr.), on hot-house furnaces, and heating with hot-water, XI. 720, 721.
 —(ROBIN), XI. 616; XII. 49.
 —(SAMUEL), viscount, XI. 617; V. 496.
 —(Sir Samuel), XI. 617; V. 500.
 —(THOMAS), poet, XI. 617.
 —in falconry, XI. 248.
 Hooded snake, XIX. 64.
 Hoofed animals, II. 774.
 Hoofman (Elizabeth), Dutch authoress, XI. 591.
 HOOFFT (Peter Cornelius), XI. 618.
 HOOGEVEEN (Heinrich), XI. 619.
 HOOGLY, town and district in Bengal, XI. 619; IV. 651.
 —river, XI. 619; X. 400.

HOO—HOR

Hooght's (Van der), Hebrew Bible, IV. 697.
 Hook, fishing, III. 150, 158.
 —(Dr), his camera lucida, VI. 117— on capillary attraction, XII. 96—on the deflection of rays of light, VII. 694.
 —(THEODORE EDWARD), XI. 620—his novels, XIX. 283.
 HOOKAH, XI. 620.
 HOOKE (Nathaniel), XI. 620.
 —ROBERT, XI. 620—his opposition to the optical discoveries of Newton, I. 667—his jealousy and illiberality, 595—on the earth's annual motion, II. 36—on Jupiter's belts, IV. 69—his prin- ciple of arches, III. 402—on gravitation, IV. 221; I. 675—on pneumatics, IV. 453—his barometer, 454—inventor of the anchor escapement, VII. 8—his improvements in clocks, 3—his watch- springs, I. 595—on light, 895—on the teeth of wheels, XIV. 396, 397—on magnetism, 3—his universal joint, 399 his micrometer, 743—on optics, XVI. 533, 598, 599—his air-pump, XVIII. 34 —his discovery of a law of nature, ut tensio sic vis, XX. 751—on the strength of materials, 763—on the thermometer, XXI. 221.
 HOOKER (John), XI. 620.
 —(Dr Joseph D.), on the Himalayan glaciers, X. 634—on the botany of the Auckland islands, IV. 268—on the Hima- layas, XI. 438—on the preparation of opium, XVI. 518.
 —(RICHARD), XI. 621—on the law of nature, XIII. 254—on virtue, XV. 563.
 —(Sir William), his improvements in Kew gardens, XIII. 75—on antarctic plants, XVII. 625.
 HOOLE (John), XI. 622.
 Hoon, town in Fezzan, IX. 528.
 Hoop-nets, XIX. 92.
 HOOPER (John), bishop, XI. 622.
 HOOPING-COUGH, XI. 622.
 Hoopoes, birds, XVI. 771; VIII. 433.
 HOORN, in Holland, XI. 622.
 Hor, plant, XI. 622; V. 206—culture of, II. 333—use of hops in brewing, V. 324 —their qualities, ib.—of Herefordshire, XI. 349—of Canada, VI. 147—of Kent, XIII. 66—excise duties on, XXI. 59.
 Hope, XIV. 576; XVII. 563.
 —(Cape of Good). See Good Hope.
 —(F. W.), his works on insects, IX. 20.
 —(Lord Justice-Clerk), on the right of salmon-fishing on the sea coast, IX. 601, n. 2.
 —(THOMAS), XI. 622—his Anastasius, XIX. 282.
 —(THOMAS CHARLES), M.D., XI. 623 —on the maximum density point of water, I. 941.
 Hopeite, mineral, XV. 93.
 HÔPITAL (G. F. Antoine), Marquis de l', XI. 623—his work on the calculus, I. 646.
 —or HOSPITAL (MICHEL DE L'), XI. 624.
 —(W.), on fractures in the earth's crust, XV. 177—on the thickness of the earth's crust, 184, n.
 HOPKINS (Ezekiel), bishop, XI. 625.
 Hopkinson's printing machine, XVIII. 562.
 Hoplegnathus, genus of fishes, XII. 303, 223.
 Hoplia, genus of insects, IX. 126.
 Hoplides, group of insects, IX. 125.
 Hoplopteryx, genus of fossil fishes, XII. 343.
 Hoplopygus, genus of fossil fishes, XII. 336; XVII. 125.
 Hoppe (David Henry), his works on in- sects, IX. 8.
 HOR, mount, XI. 626; XII. 359.
 HORAPOLLO, XI. 626, 376, 381; II. 608.
 HORATH, XI. 626.
 Horatius Cocles. See Cocles.
 —FLACCUS (Q.), Roman poet, XI. 626—Pine's edition of, IV. 707—Cun- ingham's edition of, VII. 586, 587— Bentley's emendations of, 586—Bur-

HOR—HOR

man's edition of, V. 786—on field-sports, XII. 33—his obligations to Mæcenas, XIII. 807—his verses on Pindar, XVII. 711—poetry of, XVIII. 105—friendship between him and Virgil, XXI. 595.
 Hore (H. Francis), on Irish fisheries, IX. 618, 629.
 Horeb (mount), height of, XVII. 644.
 Horestii, Caledonian tribe, VI. 74.
 Horia, genus of insects, IX. 134.
 Horiales, tribe of insects, IX. 134.
 HORIZON, XI. 630; IV. 1—sensible and rational, IV. 5; X. 480.
 Horizontal water-wheels, XII. 168—steam- engines, XX. 608.
 Hormisdas, king of Persia, XVII. 436.
 Hormuz, XVI. 724.
 HORN of animals, XI. 630; XIV. 203—use of, as manure, II. 407.
 —musical instrument, XI. 631; XV. 711—English, 710—French, XI. 631.
 —or Hoorn (Cape), XI. 631—dis- covery of, XVII. 336.
 —(Count), XI. 563 et seq.
 —(Van), buccaneer, V. 711.
 Hornbeam tree, XVII. 758, 765—as timber, XXI. 278.
 Hornbearers, order of, XIII. 122.
 Hornbills, birds, XVI. 773.
 Hornblende, XV. 80, 81—rock, 135—analy- sis of, II. 390—specific gravity of, XII. 88.
 —schist, XV. 154.
 Hornblower (Mr.), steam-engine valves in- vented by, XX. 603—beam of his engine, VI. 267.
 HORNCastle, in Lincolnshire, XI. 631— fair at, IX. 468.
 Horn-cobalt, XV. 112.
 HORNE (George), bishop, XI. 631—his In- troduction, &c., XIX. 829 et seq.
 —(T. H.), his work on bibliography, IV. 716; XIII. 378—on the Mentz Psalter, XVIII. 530.
 Hornemann, his expedition to Africa, II. 210.
 HORNER (Francis), XI. 631—on Machiavel, I. 236—estimate of his character, 237, 403, n. 1—on the currency, IX. 439.
 Hornet, IX. 198—an enemy to bees, IV. 585.
 Horning, in Scotch law, XII. 365.
 Hornsilver, XV. 107.
 Hornstone, XV. 69.
 Hornung's blue ink, XII. 383.
 Hornwort, order of plants, V. 206.
 HORROCK'S (Jeremiah), XI. 632—observed the first transit of Venus in 1639, I. 611 —among the first who appreciated the discoveries of Kepler, ib.—died young, but left behind him matter which Newton adopted, ib.
 Horsa, V. 381—ships of, XX. 118.
 Horsburgh's barometrical plates, IV. 458.
 HORSE, XI. 632; II. 337; XIV. 200—denti- tion of, XVI. 410, 412, 470; III. 107— fat of, XVI. 497—race-horse, XI. 633— hunter, 645—saddle, II. 337—dray, ib. —hackney, XI. 652, 662—charger, 656 —troop-horse, 657—coach-horse, 658— gig-horse, 660—post-horse, ib.—cart- horse, 661; II. 338—Clydesdale horses, 338; XI. 662—of America, II. 714— Indian tribes that make use of, 693 —of Arabia, III. 345—of Hungary, XII. 17—Asia, III. 740—Beykaneer, IV. 691— Brazil, V. 294—Buenos Ayres, 726— Chile, VI. 549—Derbyshire, VII. 755— Down, VIII. 123—Egypt, 432—England, 723—France, X. 248—Germany, 586— Greece, XI. 17—New South Wales, IV. 280—Ireland, XI. 662—Jamaica, XII. 682—Japan, 689—Lincolnshire, XIII. 491—Morocco, XV. 594—India, XI. 455 —Norway, XVI. 324—Palestine, XVII. 191—Persia, 423—Prussia, XVIII. 665— Scotland, XI. 662; XIX. 798—Tangustan, or Bootan, V. 34—Spain, XX. 489— breeds of the, II. 337—breeding and rearing, 338—feeding, 339, 340—affec- tionately treated by the Arabs, III. 346 —bots in, IX. 247; XXI. 569—vocal organs of, III. 101—small brain of, 178

HOR—HOU

—degeneration of, 182—Apelles as a painter of, 291—speed of race-horses, VII. 230—strength of, in draught, XIV. 417—general treatment of, XI. 663; II. 339—light playing round the ears and manes of, XIII. 458. See Horseman-ship, Hunting, Veterinary Science.
Horse-chestnut tree, V. 186, 91; XVII. 759, 762—smooth-fruited species, 762.
Horse-flies, IX. 231; XXI. 569.
Horse-Guards, XI. 74—Horse Grenadier Guards, ib.
—master of the, XI. 776.
Horse-hoes, II. 275.
Horse-leech, XI. 306.
Horse-power, in mechanics, XI. 689; XIV. 404—of steam-engines, XX. 602, 601—of boilers, 602—proportion of, to tonnage in steam-vessels, 664.
Horse-radish, XI. 745.
—tree, V. 190.
Horse-rakes, II. 279.
Horse-shoe magnets, XIV. 72.
Horse-tail, order of plants, V. 216, 144.
Horsefield (Dr.), his work on insects, IX. 15—on the volcanoes of Java, XII. 702—on the birds of Java, 704—on the bats of Java, XIV. 147—on the Mydaus of Java, 158.
HORSEMANSHIP, XI. 672—race-riding or jockeyship, XI. 686.
Horsfall (Mr.), his assassination, VII. 165.
HORSHAM, in Sussex, XI. 689; XX. 839.
HORSLEY (Samuel), bishop, XI. 690.
HORTENSIVS (Quintus), XI. 691.
HORTICULTURE, XI. 692—fruit and kitchen garden, 697—fruit garden, 702—forcing garden, 719—kitchen garden, 737—flower garden, 745—calendar, 758—in Middlesex, XIV. 808—hot walls in, XVIII. 79. See Garden, Gardening.
Horton (Mrs.), her marriage to the Duke of Cumberland, V. 474.
Horus, VIII. 438; XI. 384, 385, and *n.* 1.
—Apollo, XI. 626.
HOSANNA, XI. 761.
HOSEA, book of, XI. 761.
Hosier (Admiral), V. 456.
Hosiery. See Stocking Manufacture.
Hoskins (Mr.), on the best means of exploring the White Nile, XVI. 269.
Hoskyn (Chandos Wren), on agriculture, II. 248, 250.
Hospitality, among the Arabs, III. 353; Circassians, VI. 731; Druses, VIII. 199.
HOSPITALIERS, knights, XI. 762; VI. 622; XIII. 114.
HOSPITALS, XI. 761; XIV. 444—in London, XIII. 673—proportion of patients in, to the population of Great Britain, VIII. 749—in France, X. 268—England, VIII. 748—Ireland, XII. 529—Edinburgh, VIII. 402—Belgium, IV. 623—Madrid, XIII. 806—Dublin, VIII. 224—Paris, XVII. 283—for lepers, XIII. 340—improvement in surgical, XX. 828—royal naval, at Plymouth, XVIII. 20.
HOSPODAR, XI. 762; XV. 613—of Wallachia, XXI. 683.
Host, XI. 762.
Hot-blast furnace, X. 355; XII. 547 *et seq.*
See Furnace, Smelting.
Hot-houses, XI. 721 *et seq.*
Hot-water apparatus, for heating, XIX. 614.
Hotels, in New York, XVI. 225.
Hotham (Admiral), XVI. 133.
Hotnan (Francis), on the origin of hereditary nobility, XVI. 281.
HOTTENTOTS, XI. 762; II. 222; IX. 353; X. 714—their language, XIII. 203, 219, 225. See Bosjesmans.
HOTTINGER (J. Heinrich), XI. 762.
Houbigant's Hebrew Bible, IV. 697; XIX. 835.
HOUBRAKEN (Jacob), engraver, XI. 762.
Houel (M.), his description of the view from Aetna, II. 190—of its forests, 191.
Hough (Dr.), XVII. 392.
Houghton on the potato, II. 259.
HOUGHTON-LE-SPRING, XI. 762.
HOUND, XI. 762. See Hunting, Dog.
Hounds, fishes, XII. 322.

HOU—HUA

Hounslow Heath, trigonometrical base on, IX. 553; XIX. 456; XXI. 330, 334.
Hour, VII. 772 *et seq.*—Egyptian, VIII. 450. See Dialling.
—circles and angles, IV. 2; X. 485.
Hourdequin, trial of, X. 219.
House of Commons, VIII. 768. See Commons.
—Peers, X. 737—the supreme court of appeal, VIII. 787. See Lords, House of.
—(R. E.), his printing telegraph, XXI. 112.
House-tax, XXI. 45.
HOUSEHOLD, The Royal, XI. 773—of France, X. 279.
Houses, in London, XIII. 663—number of, in England and Wales, VIII. 717—site of, XIV. 443—attempts to make them fire-proof, XIII. 438—situation and construction of, with a view to health, XIX. 613—in the university of Oxford, XXI. 456, 457.
HOUSSA, in Central Africa, XI. 776; II. 229.
Houston (Mr.), on the tongue of the chameleon, III. 100.
—city of Texas, XI. 779.
Hovas, people of Madagascar, XIII. 792.
HOVEDEN (Roger de), XI. 779.
Hovell's explorations in Australia, IV. 255.
HOVELLERS (The), XI. 780.
Hoven, disease of cattle, XXI. 566.
Howard (Catherine), VII. 482; VIII. 704, 706.
—(CHARLES), Lord Howard of Effingham, XI. 780.
—(Sir Edward), on the state of the fleet in 1513, XX. 125.
—(Lady Frances), II. 15.
—(HENRY), earl of Surrey, XI. 780—his execution, VIII. 706—poetry, 796.
—(JOHN), XI. 782; XVIII. 568—his tomb, IV. 743; XIII. 77.
—(Luke), on the electricity of clouds, VIII. 581—his nomenclature of clouds, XIV. 655.
—(Mr.), his account of meteoric stones which fell near Benares, XIV. 631.
—(Mr.), his report on Irish fish, IX. 633.
—(Mr.), his process of distillation in vacuo, XX. 556—his vacuum-pan, 793.
Howard's patent harrow, II. 272.
Howard-Arundel MSS., XIII. 392.
HOWDEN, in Yorkshire, XI. 787.
Howe (Dr.), his printing for the blind, XVIII. 554.
—(General), V. 487; XXI. 750, 751, 752.
—(JOHN), Puritan divine, XI. 787—on the cosmological argument for the existence of God, XXI. 186.
—(RICHARD), viscount, XI. 789; V. 487; XXI. 750—his victory over the French fleet in 1794, V. 554.
Howe of Fife, IX. 543, 544.
Howell (Mr.), his method of boring wooden pipes, V. 45.
—(Mr.), his photographic process, XVII. 548.
Howick (Lord), his bill for religious liberty in the army and navy, V. 600.
HOWITZER, XI. 790, 140—boring of, V. 42—tables of ranges for, XI. 149—table of length, weight, &c., of, 134.
Howler-ape, voice of, III. 101.
Howlett (Mr.), on the population of England, VIII. 753.
Howship on the development of bone, II. 828, 829.
Howson (Mr.), on the ruins of Iona, XII. 441, *n.*
HOWTH, town near Dublin, XI. 790; VIII. 214—diving-bell used in making the harbour of, 65.
Hoy, one of the Orkneys, XI. 790; XVI. 718.
Hoyle (Mr.), on evaporation, IX. 410.
Huahine, island, XVIII. 279, 280.
HUAMANGA, in Peru, XI. 790, 73.

HUA—HUM

Huancavelica, in Peru, XVII. 474.
Huantajaya, silver mines of, XVII. 622.
Huara, town in Peru, XVII. 474.
Hubbard (Mr.), on the Bank Act of 1844, XV. 467.
—(Mr.), his estimate of the supply of wool, XXI. 906, 907.
HUBELY, town in Hindustan, XI. 790.
HUBER (Francois), XI. 790—his hive, III. 295—his work on bees, IX. 12—on bees, IV. 571 *et seq.*—his blindness, 780—on the sense of smell in bees, IX. 44, 45.
—(Pierre), on ants, III. 261 *et seq.*—on bees, IV. 573—his works on insects, IX. 12.
Hubert (Louis), conspirator, X. 214.
Hubner (James), his work on insects, IX. 12.
Huddart (Joseph), his rope-machinery, XIX. 407, 409, 410.
Hudde on insurance, XII. 396.
HUDDERSFIELD, in Yorkshire, XI. 790.
HUDSON (Henry), XI. 790—his discovery of New York, XVI. 216; Greenland, XI. 39—voyages of, XVIII. 168.
—(Jeffery), dwarf, VIII. 271.
—(JOHN), XI. 791—his collection of the minor Greek writers on geography, X. 468.
—city in Columbia, XI. 791.
—RIVER, XI. 792, 790; XVI. 213; XVIII. 168—Hudson valley district, XVI. 213.
HUDSON'S BAY, XI. 791; XVIII. 168 *et seq.*
—French expedition to, in 1782, V. 501.
—Bay Company, XI. 791—history of, X. 345—present state of, 346, 347—its contests with the North-west company, 296—their expeditions of discovery, XVIII. 169, 170, 172, 175.
—Bay sable, X. 347.
—BAY TERRITORY, XI. 791.
—Straits, XVIII. 167, 168; XI. 790.
Hudsonite, mineral, XV. 81.
Hué, river and town in Cochinchina, VII. 49.
HUE AND CRY, XI. 792; XVIII. 191.
HUELVA, Spanish province, XI. 792; III. 123, 124.
—Spanish seaport, XI. 793.
HUERTA (V. Garcia de la), Spanish poet, XI. 793.
HUESCA, town and province of Spain, XI. 793; III. 393.
HUESCAR, town of Spain, XI. 793.
HUET (Pierre Daniel), XI. 793—superintended the Delphin edition of the classics, IV. 711—Huetiana, II. 739—disposal of his library, XIII. 376—his praises of tea, XXI. 83.
Hug on recensions of the text of the New Testament, XIX. 836.
Hughes (Mr.), his printing telegraph, XXI. 94, 112, 113.
Hugo de Sancto Caro (Cardinal), IV. 695—his division of the Scriptures into chapters and verses, XIX. 838.
Hugo of Lucca on anaesthetics, VI. 632.
—(Victor), XVIII. 117—character of his novels, XIX. 289.
HUGUENOTS, XI. 794; X. 32 *et seq.*; XIX. 163—assisted by Queen Elizabeth, VIII. 711.
Huillier (l') on the geometrical structure of bees' combs, IV. 578.
Huish on bees, III. 294, 296.
—(Captain), on railway accidents, XVIII. 795.
Huiztilhuitl, Mexican king, XIV. 700.
Hulaku Khan, XVII. 437.
Hulks, XVIII. 579; XX. 123.
HULL, XI. 794—siege of, in 1643, V. 464—docks of, VIII. 74, 75—tonnage of the port of, 738.
—(Mr.), on the great oolite, XV. 207.
Hulls (Jonathan), his idea of a steamboat, XX. 636.
Human body, electricity of, VIII. 571—poisons generated in, producing disease, XIX. 612.
—nature, science of, XIII. 263.
Humane Society, their rules for the recovery of drowned persons, VIII. 182.

HUM—HUM

Humanity of Jesus Christ, XXI. 210.
Humann (M.), X. 218, 219.
HUMBER, river, XI. 796; XVII. 647.
Humbert (General), his invasion of Ireland, X. 109.
Humble sandstone, XX. 711.
Humble-bees, IX. 201.
Humboldt (Alexander von), I. 992—his early history and travels, ib.—his contributions to physical geography, ib.—on America, II. 669 *et seq.*—on the indigenous Americans, 676—on American languages, 679—on the geology of the Andes, III. 129—his account of his journey across these mountains, 131—account of a crocodile roused from its summer sleep, 181—on the ancient buildings of Mexico, II. 685—his table of the produce of gold and silver mines of America, 706—barometrical observation on the summit of Chimborazo, IV. 467—on the equinoctial current, 176—vertical section of America, 468—his contributions to magnetism and meteorology, I. 991, 993; XIV. 7, 17, 61—on the alpine vegetation of South America, V. 226—on terrestrial temperature, VI. 769—on isothermal lines, 771; I. 993; XIV. 664—his isothermal and isochimal lines, ib.—on the horary variations of the barometer, VI. 775—on the Canary Islands, 164, 165, 166—on the electricity of the torpedo and electrical eel, VIII. 573, 575; XII. 233—his confirmation of Galvani's experiments on the electricity of the frog, I. 960—on the vegetable productions of Mexico, XIV. 716, 717—his exploration of the Orinoco, XVI. 716—his Kosmos, XVII. 527—on the results of philology, 536—on the centres of gravity of continents above the sea-level, 590—his classification of plants characteristic of different zones, 626—on population, XVIII. 338, 341, 342—on the supply of precious metals from America, 460—his letters to Varnhagen Von Ense, XXI. 525—his theory of volcanic action, 607.
—(KARL WILHELM VON), XI. 796—on the Basque language, IV. 490; XIII. 214—on the inhabitants of the banks of the Iberus, XII. 196.
Humboldtite, mineral, XV. 73.
Humboldtine, mineral, XV. 125.
HUME (David), XII. 1—his estimate of Machiavelli, I. 24—on modern improvements in monarchical governments, ib.—on the statutes of Henry VII., 37, 38—on Harrington's Oceana, 47, *n.* 1—on the influence of the civil war of 1640, 48—his residence at the village of La Flèche, 61, *n.* 4—on Sir Isaac Newton, 73—on cause and effect, 78, *n.* 2, 3; 211, *et seq.*, 286—his Treatise of Human Nature, 206, 207, 221, 369—its effects on literature, 208, 214, *n.* 2—his division of the objects of knowledge, 208—admitted the existence of only impressions and ideas, 209, 219, *n.* 2—his scepticism, 209, 210, 215; XIV. 612; XIX. 709—his refutation of attempts to demonstrate self-evident truths, I. 210—benefits which have resulted from his reasonings, ib.—his distinction between the sensitive and cognitive parts of our nature, 112—on our conviction of the permanence of the laws of nature, ib.—on the course of nature, and succession of ideas, ib., *n.* 2—his reformation of the philosophical vocabulary, 213—instance of his sincerity in the search after truth, 216—Butler's opinion of his essays, 217—virtuous private character of, 368—anticipated in some of his doctrines, 441—considered his Inquiry concerning the Principles of Morals as the best of his writings, 370—merits of that work, 371 *et seq.*—his style, 370—his last illness, 440—codicil to his will, 441—on atheism, 451, *n.* 1—on the state of agriculture under the feudal system, II. 251—on God's government of the universe, III. 189, *n.*—on the balance of

HUM—HUN

- power, IV. 389—Dr Beattie on, 530—his injustice to Prynne, 713—on miracles, IX. 417; XV. 264—on Roman lawyers, VI. 745—on the coinage, VII. 78, 79—on the effect of a progressive rise of prices in stimulating productive industry, 189, n.—on Demosthenes, 729—on the character of Oliver Cromwell, 509—his letter to Gibbon, X. 612; to Dr Reid, XIX. 2—his defects as a historian, XI. 546—on manufactures, XIV. 291—on causality, 600 and n. 4—on rates of interest, XVIII. 217, n. 1—on political economy, 220—on money, 476—his intimacy with Dr Robertson, XIX. 232—his conduct to Rousseau, 449—on Rousseau, as a writer, 450—Smellie's life of, XX. 337—on Smith's Wealth of Nations, 341—Adam Smith's account of his death and character, 342; and Lord Hailes' Latin version of it, VII. 635—his essay on taxes, XXI. 38—on the argument for the existence of God from design, 188.
- HUME (Joseph), XII. 8—his opposition to ministers on financial questions, V. 632, 635, 638—his committee on the Mint, VII. 81—his motion on the Irish Church, V. 641—on the corn-laws, 650.
- Humiriaceae, nat. order of plants, V. 187.
- HUMERPOOR, town in Hindustan, XII. 9.
- Humerus, or arm-bone, in man, III. 31—in mammalia, 81—in reptiles, 88.
- Humidity, XII. 186—of the air, XIV. 675. See Moisture.
- HUMILIATI, XII. 9.
- Humiliation, Christ's state of, XXI. 211.
- Humility, I. 397.
- Humite, mineral, XV. 189.
- Humming birds, XVI. 770; V. 294; XVII. 633, 268—in West Indies, XXI. 837.
- Humours of the eye, XIII. 461; XVII. 678.
- HUMPHREY (Laurence), XII. 9.
- duke of Gloucester, VIII. 688, 689.
- Humphreys (H. R.), his works on British insects, IX. 22.
- Humus, II. 376; V. 95—soils, 98.
- Hundred court, VIII. 786.
- HUNDREDS, XII. 9—division of English counties into, VIII. 720.
- Hung-sieu-tseuen, Chinese fanatic, VI. 598, 599.
- Hungarians, their invasion of Switzerland, XX. 883.
- HUNGARY, XII. 9—fairs, IX. 469—libraries, XIII. 423—silver mines of, XV. 236—height of mountains, XVII. 642—condition of the Jews in, XII. 783—monarchy, XV. 413—language, XIII. 215—Presbyterian Church in, XVIII. 486—aversion to the name of queen in, 727—war with Russia and Austria, XIX. 498—silk produced in, XX. 278—war with Sweden, 852—Turkish invasions, XXI. 369—wines of, 885, 886.
- WATER, XII. 26.
- HUNGER, XII. 26; XVII. 658.
- HUNGERFORD, town in Berkshire, XII. 26; IV. 666.
- suspension-bridge, XIII. 676.
- HUNNI, or Huns, XII. 26, 11; X. 577, 728—Charlemagne's war with, 8—De Guignes' history of, XI. 87—language of, XIII. 217.
- Hunniades (John), VII. 320.
- Hunt (Captain), V. 470.
- (John), XVI. 186.
- (Leigh), his connection with Lord Byron, VI. 39; XVI. 186.
- (Mr.), his estimate of the value of British minerals, XV. 248.
- (Mr.), on photography, XVII. 546, 549, 550.
- (Mr.), his mode of curing stammering, XX. 534.
- Hunter (Capt.), governor of New South Wales, IV. 271.
- (Dr John), on grammar, X. 746 et seq., 792.
- (JOHN), XII. 26; XIV. 462—his anatomical labours, II. 765, 766—on the distinction of species, III. 175—on

HUN—HUT

- bees, IV. 570 et seq.—on the varieties of the human complexion, VII. 222—his discovery of lymphatics in birds, II. 766—on the period of gestation in the human species, IV. 492, n. 1—his experiments on hybrids, XII. 63—his intimacy with Dr Jenner, 720—compared with Dr Jenner, 725—on the circulating system of crustacea, XV. 356—on the teeth, XVI. 459—his work on Digestion, XX. 497—his improvements in surgery, 819—too fond of amputating, 823, n.
- Hunter (Joseph), on Pope's ancestry, XVIII. 322.
- (Dr WILLIAM), XII. 29; XIV. 462—his anatomical labours, II. 765, 766—on cellular and adipose tissues, 786, 787—on the lymphatics, 804, 805—on cartilage, 831, 832—his copartnership with Dr Cullen, VII. 572—on the torpedo, VIII. 573; XII. 326; and electrical eel, 576.
- horse, XI. 645, 662, 664, 667, 634—purchase of a, 652.
- river, IV. 279—80—wines of, XXI. 887.
- Hunter's stone-boring machine, V. 45.
- Hunterian Museum, X. 652; XII. 30.
- HUNTING, XII. 31; XX. 209—of the boar, IV. 799—in chivalry, VI. 612—horsemanship in, XI. 679, 680.
- HUNTINGDON (Selina), countess of, XII. 48—her religious party, XIV. 693—her patronage of Whitefield, XXI. 854.
- Station, on the Great Northern Railway, XVIII. 774. Plate.
- town, XII. 48.
- willow, XVII. 759.
- HUNTINGDONSHIRE, XII. 48—population and value of property, VIII. 754.
- HUNTLY, in Aberdeenshire, XII. 49; II. 34.
- Huntsman, XII. 44—duties of, 45.
- Hunyadi (John), XII. 13.
- (Matthias), XII. 14.
- Hupear (M.), his centre for the bridge of Orleans, VI. 378.
- HURD (Richard), bishop, XII. 49—his answer to Hume, 3; XXI. 730—his panegyric on Warburton, 728—on Bellingbrooke's attack on Pope, 729—his preface to Warburton's works, 731; his letters to that prelate, ib.
- HURDWAR, in Hindustan, XII. 49—commerce of, XI. 459—fair at, IX. 469.
- Hureaulite, mineral, XV. 101.
- Hurmuzd, king of Persia, XVIII. 436.
- HURON, lake, XII. 50; VI. 137; XIV. 739; XVII. 605.
- genus of fishes, XII. 274.
- Huronite, fossil mollusks, XVII. 112.
- Huronite, mineral, XV. 73.
- HURREANAH, in Hindustan, XII. 50.
- Hurricanes, XIV. 649; XVII. 616—in Jamaica, XII. 673—Barbadoes, IV. 429, 430.
- HURREUR, African town, XII. 50.
- Hurst castle, XI. 204—Charles L., prisoner in, V. 411.
- Hursthous (Charles), on New Zealand, XVI. 233 et seq.
- HUSBAND and WIFE, XII. 50—laws regarding, VIII. 782—duties of, XV. 568.
- Husbandry. See Agriculture.
- HUSKISSON (William), XII. 57—his bill for amending the combination-law, V. 643—dismissal from the ministry, 651; XVII. 363—on the corn-laws, V. 636; VII. 390—on the sinking fund, X. 329, 332.
- HUSS (John), XII. 57; IV. 310; XVIII. 449—his connection with Jerome of Prague, XII. 728, 729.
- HUSSARS, light cavalry, XII. 60.
- Hussey's reaping machine, II. 276.
- HUSTINGS, XII. 60.
- HUTCHESON (Francis), XII. 60; I. 204 and n. 3, 364—his writings and philosophy, 205—his letters to Dr Clarke, 364—on the moral sense, ib.; XIV. 580; XV. 544—compared with Butler, I. 364—on secondary desires, ib.—his errors, 365—on beauty, IV. 538.
- Hutchins' experiments on the freezing of quicksilver, VI. 352.

HUT—HYD

- HUTCHINSON (John), XII. 60—on the Deluge, VII. 720.
- (General), V. 584; VIII. 489; X. 121—on the death and character of Sir R. Abercromby, II. 29.
- Hutchison (Mr.), his patent for protecting the surface of building-stone, XX. 735.
- Hutten (Ulrich Von), his attack on Erasmus, IX. 321.
- HUTTON (Charles), XII. 61—on gunnery, XI. 107, 122 et seq.—on the resistance of fluids, XII. 161—his mathematical tables, XIII. 555—his pendulum eprouvette, XI. 157—his account of Laplace's theory of meteorolites, XIV. 633.
- (DE JAMES), XII. 61—his manufactory of sal-ammoniac, II. 721—his theory of the earth, I. 928; XII. 684; XVIII. 5, 6—theory of rain and vapour, I. 928—contrasted with Dr Black, ib.
- Huxley (Prof.), on the motion of glaciers, XV. 139, n. 1—his arrangement of the hydrozoa, XXI. 1006—on the genus thalassicola, 1008.
- Huxtable (Rev. A.), his mode of feeding cattle, II. 345.
- HUY, town in Belgium, XII. 61.
- HUYGENS (Christian), XII. 61—his discoveries regarding motion, I. 595—his micrometer, 612; XIV. 757—other adaptations of the telescope to astronomical purposes suggested by, I. 613—on telescopes, II. 89—his theory of light, I. 630, 895, 896—his life and character, 697, n. 1—his improvements in dynamics, 719—on probability, III. 220—on Saturn, IV. 71, 72; I. 612—his astronomical discoveries, III. 802; I. 612—on pneumatics, IV. 453—his barometer, ib.—on barometrical measurements, 463, n. 1—on the pendulum, VII. 3; I. 595, 697, n. 1; XVII. 376—principle of, I. 896—on probabilities, XII. 394—on simple and double refraction, I. 631, 895, 901; XIII. 453—on the figure of the earth, IX. 549—on micrometers, XIV. 743—his birthplace, XI. 181—extract from a MS. of, regarding Sir Isaac Newton, XVI. 206, n. 2—on the discovery of the telescope, 527; and microscope, 529—on double refraction and polarisation of light, 531, 532, 627; discovery of polarisation by calc-spar, I. 903—his lens of no aberration, XVI. 574—his long-focused refractors, XXI. 119—his eye-piece, 124—on the doctrine of chances, XVIII. 589—his experiment on the alternate attraction and repulsion of glass, XX. 753—on the quadrature of the circle, 523.
- HUYSUM (Jan Van), painter, XII. 61.
- Hyacinth, V. 212—culture of, XI. 761.
- mineral, XV. 85.
- Hyæna, genus of mammalia, XIV. 167—dentition of, XVI. 459, 460—fossil, XVII. 172.
- Hyænodon, genus of fossil mammals, XVII. 165—dentition of, XVI. 464.
- Hyalea, genus of mollusks, XV. 358—fossil, XVII. 111.
- Hyalite, mineral, XV. 69.
- Hyaloid membrane and fluid of the human eye, III. 44.
- Hyalosiderite, mineral, XV. 89.
- HYBERNATION, XII. 62; III. 180; II. 52—of the marmot, XIV. 179—of bats, 147—in the insectivorous mammals, 150—of the dormouse, 180—hamster, 182—economic rat, 183—tanrecs, 152.
- HYBLA, in Sicily, XII. 62—honey of, XX. 244.
- Hybodus, genus of fossil fishes, XII. 340; XVII. 117.
- Hybos, genus of insects, IX. 235.
- Hybotinae, insects, IX. 235.
- HYBRID, XII. 63—generally barren, III. 174.
- Hybridization in plants, V. 159.
- HYDASPES, now Jelum, river, XII. 63; XVIII. 687—passed by Alexander the Great, XIII. 769.
- Hydaticus, genus of insects, IX. 140.
- Hydatids, XXI. 976.

HYD—HYD

- HYDE (Edward), Earl of Clarendon, XII. 63; V. 421, 422—impeached, 425—on Blake's exploits, IV. 752—on the government and laws of England, VIII. 763 n., 769 et seq.—on the character of Selden, XX. 38—on the star-chamber, 537.
- Park, London, XIII. 668.
- (THOMAS), orientalist, XII. 67.
- town in Cheshire, XII. 67.
- HYDER ALI, XII. 67; XI. 490, 492 et seq.; XIV. 104, 105—his conquest of Canara, VI. 160.
- HYDERABAD, XII. 67, 68; XI. 450, 463.
- city and fortress, in Scinde, XII. 68; XX. 305—climate of, 304—remarkable fall of rain at, ib.—capitulation of, to Sir C. J. Napier, XV. 776.
- HYDRA, island, XII. 69.
- polypus, XXI. 1005.
- Hydrachna, genus of arachnides, III. 389.
- Hydrangeaceae, nat. order of plants, V. 194.
- HYDRAOTES, river, XII. 69; XVIII. 687.
- Hydrargillite, XV. 86.
- Hydrargyra, genus of fishes, XII. 252.
- Hydraspis, genus of reptiles, XIX. 18.
- Hydrates of lime, XX. 713.
- Hydraulic press. See Hydrostatic.
- ram, XII. 75, 173.
- HYDRAULICS, XII. 103, 69—Souterasi, or hydraulic obelisks at Constantinople, III. 335—pipes for conveying water into towns, 337—Coulomb on the cohesion of fluids, VII. 464—mean hydraulic depth, I. 886; XIX. 194—hydraulic machinery, XII. 163—improved hydraulic machines, I. 889—theory of the motion of rivers and canals, XIX. 182—principle on which systems of depend, 184—laws of, applicable to air, XVIII. 29. See Aqueduct, Fluids, Hydrodynamics, Pumps, Water-works, &c.
- Hydriodate of potassa, XIV. 435.
- Hydriodic acid, VI. 470.
- Hydro-carbons, XIX. 87.
- Hydro-electric machine, VIII. 605, 534.
- Hydroboracite, XV. 94.
- Hydroborocalcite, mineral, XV. 94.
- Hydrocampe, genus of insects, IX. 218.
- Hydrocanthari, insects, IX. 100.
- Hydrocele, surgical treatment of, XX. 835.
- Hydrocephalus, in the domestic animals, XXI. 575.
- Hydrochaerus, genus of mammalia, XIV. 188.
- Hydrocharidaceae, nat. order of plants, V. 210.
- Hydrochloric acid, VI. 467—gas, poison, XIV. 435.
- Hydrochus, genus of insects, IX. 116.
- Hydrocorisæ, insects, IX. 164.
- Hydrocyanic acid, VI. 474—its poisonous properties, XIV. 437; XVII. 702. See Prussic Acid.
- Hydrocyon, genus of fishes, XII. 247.
- HYDRODYNAMICS, XII. 69; I. 886—fundamental principles of, 723—Daniel Bernoulli on, ib.—D'Alembert and Euler, 724—Lagrange, Newton, Bouguer, ib.—Bossut, 725—experiments of Smeaton, ib.—method of investigating the resistance of fluids, ib.—experiments of Robins, Borda and Hutton, on the velocity of moving bodies, 726; of Coulomb, ib., 887—observations on the flow of air and water through pipes, 726—Ampere's experiment of projection of water through a vertical slit, ib.—progress of, 886—Dubuat on, ib., 887—friction and resistance of fluids, 886—viscosity of fluids, 887—Venturi on, 727, 887—three cases of fluid resistance to moving solids, 887—Prof. Stokes' definition of index of friction, ib.—Weber's and Russell's experiments on waves, 888—peculiar effect of wave transmission on canal navigation, 889—water-wheels, 889, 890—turbines, ib.—Poncelet on, 890—breast-wheels, ib.—motion of fluids in pipes, XVIII. 64. See Hydraulics, Hydrostatics.
- Hydrofluoric acid, VI. 470.

HYD—HYL

Hydrogen, in chemistry, VI. 457—in mineralogy, XV. 60, 61—combined with oxygen, VI. 458; with carbon, 473—in plants, II. 375; V. 95—its lightness and use in balloons, II. 170, 171, 172—tones produced by the burning of, 108—specific gravity of, XII. 89—its use with oxygen in the blowpipe, IV. 794—alimentary substances containing, VIII. 18, 19, 24—electricity developed in the combustion of, 568—deutoxide of, 461—illuminating power of gases deteriorated by mixture with, X. 431—as an element in the crust of the globe, XVII. 618—in the combustion of coal, XX. 629—carburetted, X. 431; XIV. 436; XVII. 602—sulphuretted, XIV. 436.

Hydrographic charts, VI. 426.

Hydroids, polypes, XXI. 1005.

Hydromagnesite, mineral, XV. 92.

Hydromagnocalcite, XV. 92.

Hydromancy, VIII. 54.

HYDROMETER, XII. 185, 86.

Hydrometra, genus of insects, IX. 164.

Hydromys, genus of mammalia, XIV. 180.

Hydropardus, genus of fishes, XII. 247.

Hydropathists, XIV. 465. See Preissnitz.

Hydrophane, mineral, XV. 69.

Hydrophil, insects, IX. 116.

Hydrophis, genus of serpents, XIX. 67—teeth of, XVI. 432—poison of, XIX. 46.

Hydrophite, mineral, XV. 80.

HYDROPHOBIA, XII. 185; VIII. 423; XIV. 440; XVII. 700—dipping as a cure for, XII. 721; XIV. 454—in the domestic animals, XXI. 575.

Hydrophyllaceæ, nat. order of plants, V. 200.

Hydroporus, genus of insects, IX. 101.

Hydroselenic acid, VI. 478.

Hydrostatic balance, IV. 386—press, II. 102; IV. 451; V. 273; XII. 178; XIV. 386—test, 423—bellows, XII. 81.

HYDROSTATICS, XII. 185, 77, 69; XVIII. 22—discoveries of Archimedes, Stevinus, Torricelli, Otto Guericke, I. 596—principles of, 723, 724—Euler on, 724—the theory reduced into a simple form by Bouguer, 725—outline of this theory, ib.—investigation of the earth's figure from the laws of, IX. 564—laws of, applicable to air, XVIII. 29.

Hydrosulphuric acid, VI. 477.

Hydrothorax, in the domestic animals, XXI. 573.

Hydrous, genus of insects, IX. 116.

Hydrozoa, polypes, XXI. 1006—fossil, XVII. 95.

HYDRUNTUM, now Otranto, XII. 185; XX. 242. See Otranto.

HYERES, French town, XII. 185.

— islands, XII. 185.

Hygeia, planet, IV. 91.

Hygiene, public, XIV. 463; XIX. 602—general, 607—special, 613.

HYGINUS (C. Julius), XII. 185.

Hygrobia, genus of insects, IX. 101.

Hygrometer, XII. 186; IV. 183—dew-point hygrometer, I. 935—invention and description of, 765—applications of, 766, 767—Leslie's, VII. 102—necessary in hot-houses, XI. 724—its use in barometrical observations, IV. 466—Peltier's thermo-electric hygrometer, XXI. 654.

HYGROMETRY, XII. 186; XIV. 653—observations on, in a balloon, by Biot and Gay-Lussac, II. 182, 183—theory of, I. 934—M. Regnault on, 958—periodical fluctuations in the hygrometric state of the atmosphere, XIV. 674—Saussure's work on, XIX. 653—best time for hygrometric observations, XXI. 225. See Meteorology, Evaporation.

Hygroscope, XII. 186. See Hygrometer and Hygrometry.

Hyla, genus of reptiles, XIX. 78.

Hylaosaurus, fossil reptiles, XVII. 151, 640.

Hylaues, genus of insects, IX. 198.

Hylesinus, genus of insects, IX. 142.

Hylism, IX. 421.

Hylobates, genus of mammalia, XIV. 139.

Hylobius, genus of insects, IX. 140.

HYL—HYT

Hylotoma, genus of insects, IX. 183.

Hylurgus, genus of insects, IX. 142.

Hymen, in anatomy, III. 71.

Hymenium, in botany, V. 142, 147.

Hymenoptera, order of insects, IX. 25, 181.

HYMETTUS, mountain, XII. 188—marble of, XIX. 843.

HYMN, XII. 188—Homeric hymns, XVIII. 102—Spenser's, XX. 506.

Hynnis, genus of fishes, XII. 297.

Hyodon, genus of fishes, XII. 249.

Hyodontidæ, family of fishes, XII. 248, 249.

Hyoid bone, III. 26—its muscles, 39—of the perch, XII. 214.

Hyoscyamus niger, its poisonous properties, XIV. 437. See Henbane.

Hypæthros, in architecture, III. 510.

HYPATIA, XII. 190; II. 483; IX. 677; X. 502—invention of the aræometer erroneously ascribed to, III. 390; XII. 86.

Hypatius, VII. 312.

Hypera, genus of insects, IX. 139.

HYPERBOLA, XII. 191; X. 544, 555; XIV. 518; VII. 269—in masonry, XX. 726.

HYPERBOLE, XII. 191.

Hyperbolic lenses, XVI. 574.

Hyperboloid, X. 559; XIV. 519.

Hyperborean, Abaris (the), II. 10.

Hypericaceæ, nat. order of plants, V. 186.

HYPERIDES, Athenian orator, XII. 192; XVII. 526.

Hyperion, XI. 385.

Hyperoodon, genus of mammalia, XIV. 230—jaw and teeth of, XVI. 443.

Hypersthene, XV. 82—rock, 135.

Hypertrophy, XVII. 663, 690.

HYPHASIS, river, XII. 192; XIII. 770; XVIII. 687.

Hypnos, genus of fishes, XII. 327.

Hypnotism, XX. 413, 433.

Hypo, a prefix, VI. 453.

HYPOCHONDRIASIS, XII. 192.

Hypochloric acid, VI. 468.

Hypochlorite, XV. 90.

Hypochlorous acid, VI. 468.

Hypocycloid, VII. 269; IX. 274.

Hypoderma, genus of mammalia, XIV. 148.

Hypogæon, genus of annelides, XI. 302.

Hypogæa, in architecture, III. 510.

Hypogynous stamens, V. 127, 179—exogens, ib.

Hyponitrous acid, VI. 463.

Hypophosphorous acid, VI. 480.

Hypophthalmus, genus of fishes, XII. 262.

Hypoprion, sub-genus of fishes, XII. 323.

HYPOSTASIS, XII. 193, 727; XXI. 193, 194.

Hypostilbite, mineral, XV. 76.

Hypostomus, genus of fishes, XII. 264.

Hyposulphite of soda, its use in photography, XVII. 545, 547.

Hyposulphuric acid, VI. 477.

Hyposulphurous acid, VI. 476.

Hypothense, X. 508.

HYPOTHESIS, XII. 193—in geometry, X. 508—the true use of, I. 101, n. 2.

Hypotrachelium, in architecture, III. 510.

Hypoxidacææ, nat. order of plants, V. 212.

Hyprorus, genus of fishes, XII. 229.

Hypsiniotus, genus of fishes, XII. 302.

Hypsiptymnus, genus of mammalia, teeth of, XVI. 449.

Hypsodon, genus of fossil fishes, XII. 346.

Hypulus, genus of insects, IX. 132.

Hyracotherium, teeth of, XVI. 465.

Hyrax, genus of mammalia, XIV. 199—stomach of, III. 108—dentition of, XVI. 471.

HYRCANIA, XII. 193—reduced by Alexander, XIII. 768.

Hyrcanus (John), XII. 733, 770; XVII. 194.

Hyrtl (Joseph), his anatomical works, II. 770.

Hyson teas, XXI. 87.

Hyssop, V. 202; XI. 745.

HYSTERIA, XII. 192; XVII. 700.

Hystriidæ, family of rodents, XVII. 632.

Hystrix, genus of mammalia, XIV. 187.

Hysudrus, river in the Punjab, XVIII. 687.

HYTHE, town in Kent, XII. 193—extract from its corporation records, XV. 683.

I—ICH

I

I, letter of the alphabet, XII. 194—in abbreviations, II. 19.

Ialta, or Yalta, in the Crimea, VII. 505.

Iambic verse, XII. 195—its invention ascribed to Archilochus, III. 429.

IAMBlichus, XII. 194.

IAMBUS, in prosody, XII. 195; IX. 770.

Iannas, Egyptian king, VIII. 457.

Ianthina, genus of mollusks, XV. 389.

IAPODES, tribe of Illyria, XII. 195.

Ibalia, genus of insects, IX. 192.

Ibatzes, VII. 314.

Iberia, name of Spain, XII. 196.

— in Asia, XII. 196; X. 566—ravaged by the Turks, VII. 385.

Iberian alphabet, II. 615—language, IX. 351.

— mountain system, XVII. 595; XX. 486.

Iberians, IX. 387; XX. 457.

IBERUS, now Ebro, XII. 195. See Ebro.

Ibex, II. 626; XIV. 212—peculiar to the Alps, XVII. 630, 632—Caucasian, XIV. 212. See Bonquetin.

IBIS, bird, XII. 196; XVI. 800—Egyptian, VIII. 433, 488—sacred to Thoth, XI. 383.

Ibn Sina. See Avicenna.

Ibos, African race, IX. 352.

Ibrahim Aga, III. 365, n.

IBRAHIM, or Ibraheem Pasha, XII. 196; VIII. 494, 495—his war against the Wahabys, III. 365—his Greek campaigns, XI. 28—his conquest of Syria, XX. 911.

— Bey, VIII. 488.

— Turkish emperor, XXI. 369, 376.

IBRAIL, XII. 196; V. 266; XXI. 683.

Ibycter, genus of birds, XVI. 741.

IBYCUS, Greek poet, XII. 196.

Icacinaeæ, nat. order of plants, V. 185.

Icarus, VII. 616.

ICE, XII. 196; XV. 125—celerity of sound through, II. 103—how collected in India, VII. 101—artificial, 104, 544; XI. 271, 275; VI. 353—mode of forming it in India, IX. 415; XIV. 646—floating, XVII. 583—cause of its floating, XI. 269—field, pack, and floe ice, XVII. 584—glacier ice, X. 636, 639—system of rings formed in, XVI. 652—specific gravity of, XII. 88—its influence on rocks, XV. 139—its elasticity, &c., XX. 753, 754.

ICE-HOUSE, XII. 196.

Ice-islands, XII. 197.

Ice-plant, V. 194.

Ice-spar, XV. 70.

ICE-TRADE, XII. 196.

ICEBERGS, XII. 196; XVII. 583—influence of, on rocks, XV. 140.

Iceblink, XII. 197.

ICELAND, XII. 197—ancient mythology of, VIII. 388—its volcanic nature, IX. 384—glaciers, X. 634—language, XIII. 211—birds, XVI. 731—proportion of insane, XIV. 536—height of mountains in, XVII. 644—volcanoes, 589; XXI. 605—Geysers, XVII. 602—its poets and historians, XIX. 691—sagas of, 690—Rask's Icelandic grammar, XVIII. 808.

— moss, XII. 203, 200; V. 217.

— spar, XV. 92; XII. 202—double refraction of, I. 630; XV. 57; XVI. 532, 626; XIII. 453—lenses of, XVI. 628—system of rings in, 651, 652, 668—luminous circles in, 689—electricity produced by pressure of, VIII. 562. See Calcareous Spar.

Icelus, genus of fishes, XII. 282.

ICENI, XII. 203; IV. 799.

Icennine Way, VIII. 112.

Icetas, VI. 283; XX. 900.

ICHNEUMON, XII. 203—genus of insects, IX. 188—one of the mammalia, XIV. 166.

Ichneumonides, tribe of insects, IX. 184.

Ichnography, III. 510.

ICH—IDO

Ichnology, XVII. 129.

Ichthyocampus, genus of fishes, XII. 315.

Ichthyodorulithes, fossil fishes, XII. 339.

ICHTHYOLOGY, XII. 204—circulation and respiration of fishes, II. 772—bones, III. 74, 89—muscles of tail, 93—organs of smell, 94—eyes, 95 *et seq.*—ears, 99—nervous system, 103, 104—brain occupies but a small part of the skull, 104—stomach, 109—pyloric appendages, 111—intestines, 110, 111—organs of circulation, aëration, and secretion, 112, 113—teeth of fishes, 105, 106; XVI. 420; as a means of classification, 477—Cuvier on, VII. 605—electricity of fishes, VIII. 572—fishes ejected by volcanoes, XXI. 607. See Fish and Fisheries.

— (Fossil), XII. 332; XVII. 115, 129, 640—fossil fishes of Perthshire, 457—Roxburghshire, XIX. 453—Russia, 517—Scotland, 791, 793—order of their appearance in the strata of the earth, XVII. 92.

Ichthyophagi, XVI. 125.

Ichthyopterygia, fossil reptiles, XVII. 149.

Ichthyosaurus, XVII. 149—peculiarities of its bones, III. 89—its eyes, 96.

Icolmkill, XII. 440. See Iona.

ICONIUM, town of Asia Minor, XII. 356; XIII. 129.

ICONOCLASTS, XII. 356, 357; XIII. 334, 641; XVII. 59.

Iconolatæ, XII. 356.

Icononzo, natural bridge of, III. 130.

Icosandria and Icosandrous, in botany, V. 177, 127.

Icositetrahedron, XV. 41, 42.

Icterus, genus of birds, XVI. 762.

Ictides, genus of mammalia, XIV. 155.

Ictinia, genus of birds, XVI. 744.

ICTINUS, Greek architect, XII. 356—architect of the Parthenon, IV. 168—temple erected by, on Mount Cotilium, XVII. 508.

IDA (Mount), XII. 356; VII. 615.

— Saxon chief, XIX. 743.

Ideal, in the fine arts, III. 707, 716.

IDEALISM, XII. 356—by whom first assailed, I. 80—Berkeley's theory of, 165; XIV. 611—the object of Dr Reid to refute it, I. 218—Schelling's views of, XIX. 716.

Idealist, meaning of the term as employed in philosophy, I. 190, n. 4.

Ideality, XVII. 563.

Ideas, XIV. 552 *et seq.*—M. Allamand's criticism on Locke's argument against innate ideas, I. 107, 250—Arnold's doctrines on, 80—Cudworth's, 194, 195—Diderot's erroneous estimate of Locke's discoveries, 109, 111—views of Gassendi, 73; Hume, 209; Helvetius, 179; Kant, 279; XIII. 48; Leibnitz, I. 123; Locke, 109; Shaftesbury, 118; Voltaire, 251—remarks concerning, 247—abstract ideas, II. 52—Meyer's doctrine of the materiality of, III. 316—Plato's notions of, 538; XVII. 798—Condillac's, VII. 234, 236—innate ideas, XIV. 601—three stages in the development of, XIII. 595—material signs of, XXI. 94. See Association of Ideas.

Identity, laws of, XIII. 572.

— (personal), XIV. 618—Dr Butler on, I. 217—in medical jurisprudence, XIV. 425.

IDES, XII. 356; VI. 76.

Idia, genus of insects, IX. 249.

Idiocy, XIV. 527, 528, 538—in Egypt, VIII. 423.

Idiom, XIII. 188.

Idiosyncrasy, its relation to health, XIX. 607; to the amount of air required for respiration, XXI. 541.

Idleness, diseases arising from, XIV. 442.

Idmenia, fossil animals, XVI. 98.

Idocrase, mineral, XV. 85.

Idolaters, I. 465.

IDOLATRY, XII. 356—its connection with sculpture, XIX. 846.

IDOMENEUS, XII. 357; VII. 494.

Idoteadæ, crustacea, VII. 542.

IDR—IMA

IDRIA, XII 357—quicksilver mines of, XV. 237.
 Idrialite, mineral, XV. 125.
 Idro (Lago d'), XII 637; XIII. 644.
 Idsted, battle of, VII. 744; IX. 660.
 IDUMEA, XII 357; VIII. 411.
 IDYLL, XII 359; VIII. 374.
 Iena. See Jena.
 Ienikale, in the Crimea, VII. 505.
 Ierax, genus of birds, XVI. 745.
 IF, French island, XII 359; XIV. 316.
 IGLAU, town in Austria, XII 359.
 IGLESIAS, town in Sardinia, XII 360.
 Ign, his logotypy, XVIII. 552.
 IGNATIUS LOYOLA, XII 360, 750.
 — (Str), XII 360; IX. 491—MSS. of, XIII. 393.
 — (St), bean, V. 200.
 Igneous rocks, XV. 131; XVII. 587—classification of, 155—petrology of, XV. 183—in Scotland, XIX. 791—as building stones, XX. 711.
 IGNIS FATUUS, XII 360; X. 409; XIII. 457.
 Ignition of wires by electricity, XXI. 626.
 Ignorance, sins of, XXI. 201.
 Igor, king of Russia, XIX. 469.
 IGUALADA, Spanish town, XII 360.
 Iguana, XVII. 634; XIX. 33—teeth of, XVI. 434, 435.
 Iguanidae, reptiles, XIX. 30—teeth of, XVI. 434.
 Iguanodon, XVII. 151—teeth of, XVI. 435, 436.
 Ihre-Oehrling, XVII. 535.
 Ikan-umpit, fish, XII 302.
 Ikhsheedees, dynasty of, VIII. 476.
 ILCHESTER, XII 360; XX. 411.
 ILDEFONSO (San), Spanish town, XII 360.
 ILE-DE-FRANCE, XII 360; X. 276.
 ILERDA, XII 360; XIII. 341.
 Ileum, anatomy of the, III. 60—villi of, ib.—comparative anatomy of, III.
 Ilex, V. 199. See Holly.
 ILFRACOMBE, town in Devon, XII 360.
 Iliac arteries, III. 65.
 Iliad of Homer, XVIII. 100. See Homer.
 Illicaceæ, nat. order of plants, V. 199.
 ILISSUS, river, XII 361; IV. 170.
 Ilithia, genus of insects, IX. 219.
 Ilium, monarchy of, XV. 413.
 — See Troy.
 Ilkley, fountain in Yorkshire, XV. 39.
 Ill, river, XX. 747.
 Ille and Rance Canal, XII 361.
 ILLE-ET-VILAINE, in France, XII 361.
 Illæus, trilobite, XVII. 101, 102.
 Illecebraceæ, nat. order of plants, V. 193.
 Illegitimate children, duties between parents and, XVII. 276—number in England, VIII. 756; IV. 494; in Scotland, XIX. 800—in different countries and towns in Europe, IV. 494. See Births.
 Illiger (Prof.), his classification of animals, III. 183; and of the mammalia, XIV. 128, 129—on birds, XVI. 730, 819—his works on insects, IX. 11.
 Illimani, gold of, IV. 824.
 ILLINOIS, XII 361; XXI. 419—debt of, 428—wines, 888.
 ILLUMINATI, XII 363; XV. 809.
 Illuminating power of gases, X. 428.
 — of telescopes, XXI. 128.
 Illumination, artificial, XIX. 615.
 — circle of, X. 481.
 — of microscopic objects, XIV. 794—798—of the wires of micrometers, 744, 745—of clock dials, VII. 24.
 ILLYRIA, or Illyricum, XII 363; XIX. 332—reduced by Julian, VII. 307; and by Philip of Macedon, XIII. 763.
 Illyrian alphabet, II. 614—language, IX. 392—coinage, XVI. 370.
 Ilmen, lake, XIX. 516.
 Ilmenite, mineral, XV. 109.
 ILMINSTER, in Somerset, XII 364.
 Iluocates, genus of fishes, XII 310.
 ILVA, or Elba, XII 364; VIII. 521.
 Ilvaite, mineral, XV. 90.
 Image-breakers, or iconoclasts, XII 365; XIII. 334, 641. See Iconoclasts.
 Image-worship, I. 465; XII 356, 357, 671; XVIII. 337.

IMA—INC

Images, in optics, formation of, by apertures and mirrors, XVI. 554—by lenses, 567—form of, by lenses of different sizes, 569.
 IMAGINATION, XII 364; XIV. 576—incorrectly identified by D'Alembert with abstraction, I. 6—its province may be considered narrow when compared with that of observation and reasoning, 79—Addison on the pleasures of, 161—pleasures of, mostly originate in association, 384—the source of apparitions, III. 317—fecundity of, in the blind, IV. 778—poetic, XVIII. 92—effect of civilization on, 96.
 Imago, in entomology, IX. 54.
 IMAUM, or Iman, XII 364—of Muscat, III. 360; XV. 699.
 Imbattled, in heraldry, VII. 491.
 Imbricate leaves, V. 87.
 IMBROS, or Imbro, island, XII 364.
 IMERITIA, in Russia, XII 364.
 Imilcar, VI. 282.
 Imitation in music, XV. 733—imitative music, 737—phrenological sentiment of, XVII. 563.
 IMMACULATE CONCEPTION, XII 365; XIV. 328.
 Immediately, VIII. 9.
 Immersion, in baptism, IV. 424, 426.
 Immorality, a cause of the corruption of Christianity, I. 506, 507, 520.
 Immortality of the soul, views of the ancients regarding, I. 463—only conjectured before the promulgation of Christianity, VI. 636, 637—influence of the doctrine in helping to diffuse that religion, 637—Clarke's controversy with Dodwell on, 757—not a necessary attribute of personal existence, XIV. 619—taught in the ancient mysteries, XV. 754—opinions of Aristotle on, III. 549; of Plato, XVII. 807; Socrates, XX. 396. See Future State, Soul.
 IMOLA, town in the Papal States, XII 365.
 Impact of bodies, laws of, XIV. 414.
 Impanation, VII. 333.
 IMPEACHMENT, XII 365; VIII. 773.
 Imperative mood, X. 768 and *n. l.*
 Imperator, XIX. 295, 327, 330.
 Imperial orders of knighthood, XIII. 122.
 Impey (Sir Elijah), V. 509, 514; XI. 494—charges against, V. 529.
 Imphee, sugar-bearing plant, XX. 798.
 Implements of husbandry, II. 270.
 Importation, taxes on, XXI. 59, 61—effect of restrictions on the importation of corn, VII. 388, 390.
 Imports, into the United Kingdom, VIII. 734, 735—of grain, VII. 397—countries whence, 399, 400—customs-duties on, XXI. 59, 61—into the United States, 426.
 Imposition, in printing, XVIII. 540.
 — of hands, XI. 205.
 Impost, in architecture, III. 510.
 Impotence, causes of, XIV. 425.
 Impregnation, organs of, III. 69—of bees, IV. 581, 584. See Generation.
 IMPRESSMENT of seamen, XII 365; V. 562; VIII. 776; IX. 776; XVI. 106.
 IMPRISONMENT, XII 365; XIV. 445—numbers sentenced to, in England and Wales, VIII. 750.
 Improvers of Agriculture, Society of, II. 262.
 IMPROVISATORI, XII 366—female, in Egypt, II. 600.
 Impulsion, motion from, IV. 219; VIII. 322—explained by reaction, 364—of vessels by the wind, XX. 7.
 Imputation of sin, XXI. 204, 205, 207.
 Imrie (Col.), on the mineralogy of Forfarshire, IX. 781.
 IN CENA DOMINI, Papal bull, XII 366.
 Inachus, VII. 712.
 Inaugural stones, XIX. 750.
 Inca, genus of insects, IX. 127.
 Incandescence, XI. 272; XIII. 450.
 Incantation, resorted to by the Romans for the cure of diseases, XX. 812.
 Incarnation, era of the, VI. 667—ancient opinions regarding the, I. 516.

INC—IND

Incas of Peru, XVII. 461 *et seq.*—their government, II. 686.
 INCENSE, XII 366.
 INCHBALD (Mrs), XII 367—her novels, XIX. 279.
 INCHCOLM, island, XII 367; IX. 795.
 Inchgarvey, island, IX. 795.
 INCHKEITH, island, XII 367; VIII. 390—lighthouse, IX. 795; XIII. 475, 476, *n.*
 Inchmarnoch, VI. 27.
 Incidence, angle of, III. 143.
 Incisor teeth, in man, III. 25; XVI. 409, 417—in the lower animals, III. 107. See Odontology.
 Inclination, of the moon's orbit, IV. 33—of the planetary orbits, 57, 59—of two planes, in geometry, X. 532—of beds, in geology, XV. 168.
 Inclined barometer, IV. 454.
 INCOMBUSTIBLE CLOTH, XII 367; II. 716; XV. 81. See Asbestos.
 Income of the United Kingdom in 1854, VIII. 751; items from which it is derived, XXI. 75—effect of war expenditure on that of individuals, VII. 190—taxes on, XXI. 50—impossibility of fairly assessing incomes, ib.—incomes should not be disclosed, 56.
 Income-tax, V. 566—repeal of, 590—in Scotland, XIX. 809—proposed by Sir R. Peel, XVII. 364—apparently an equal, but in reality a most unequal tax, XXI. 50—pernicious operation of a graduated, 52—account of the late, ib.; and existing income-tax, 53; returns under, ib. 54—objections to, 55.
 Incommensurable quantities, X. 517; XIII. 167.
 Incorporation of Universities, XXI. 453 *et seq.*
 Incubation, in reptiles, XIX. 50.
 INDENTURE, XII 367; XIV. 346.
 Independence, declaration of, by the United States, XXI. 436—war of, ib.
 INDEPENDENTS, XII 367; IX. 278; XVIII. 480—places of worship in England and Wales, VIII. 745; in Scotland, XIX. 801—English in the seventeenth century, V. 408 *et seq.*—their idea of ordination, XVI. 704.
 Indeterminate problems in algebra, II. 538.
 INDERABIA, XII 372; III. 125.
 INDEX EXPURGATORIUS, XII 372; IV. 712; XX. 492.
 Index to Entomology, IX. 263—to Mammalia, XIV. 239—to the Natural Orders of Plants, V. 281—to Ornithology, XVI. 829—to Helminthology, XI. 307—registration indexes, XVIII. 835.
 INDIA, XII 372; III. 735; XI. 446—metaphysical and ethical remains of, I. 203—arc of meridian measured in, 775, 853; IX. 552—architecture of, III. 434—antiquity of the caverns of, ib.—British troops in, 665—early history of, 742—Mahomedan empire in, 743, 746—conquered by Sultan Baber, 746—rise of British power in, 747—knowledge of the ancients respecting, 752—commerce of, ib., 753—astronomy in, 785—were its superstitions derived from or communicated to Egypt? V. 272—Mr Dundas's measure respecting, 507—discussion in Parliament in 1788, as to the payment of troops sent to, 528—war with Hyder Ali and Tippoo, 539, 541—Burmese war, 646, 783—Afghan war, 667—war with the Sikhs, 669, 671—cloth manufactures in, VI. 92—carpets, 270—castes, 314—chronology, 676; XII. 789—mode of cooling apartments and collecting ice in, VII. 100, 101—yields no tribute to Britain, 140—as a colony, 148—effects of British dominion, ib.—trade with Europe in the middle ages, 186—discovery of a maritime route to, 188—exports from Britain to, 190—alleged rapidity of fortune-making in, 196—cotton manufacture, 437, 447—trade with Damascus, 640—ancient temples and idols, 716—Danish settlements sold to England, 745—diamonds,

IND—IND

VIII. 1, 2—dyeing, 272, 273—calico-printing, 314—method of forming ice in, IX. 415; XIV. 646—ethnology, IX. 346—Alexander's expedition to, X. 463.
 XIII. 769—glaciers of, X. 634—languages, XIII. 194, 195, 206, 207—libraries of, 431—Mill's History of British, XV. 12—geological survey of, 205—miocene rocks, 214—missions established in, 271—monarchy, 413—mystics, 755—coins, 442, 445; XVI. 390—Mohammedanism in, XV. 308—newspapers of, XVI. 203—state of the press in 1832, 204, and Lord Metcalf's law of 1835, and Lord Canning's of 1857, ib.—insurrection of the Sepoys, in 1857, 301; XIV. 471—ancient philosophy, V. 271—life assurance societies in, XII. 413—hail storms in, XIV. 659—dust whirlwinds, 685—philology in, XVII. 519; parallel between it and that of the Greeks and Jews, ib.—river system of, 606—mountains of, 598; their height, 643, 644—great plain of, 610—earthquakes in Upper and Western, 616—botanical region of, V. 228; XVII. 628—discovery of a passage to, X. 393; XVIII. 382—settlement of the Portuguese in, ib.—imports of the precious metals into, 467, 468, 469—exports from, 470—causes of the drain of bullion to, 470, 471—want of mines of the precious metals in, 470—trade with China, 472—precious metals derived by, from China, ib.—currency of, impolitic regulations regarding, ib.—railway statistics, 787—sculpture in, XIX. 848—varieties of rice in, 157—serpents, 46, 71, 72, 73—duration of voyage from Britain to, XX. 19—best course to, in passing through the tropics, 20—silkworms in, 288, 289, 295—mesmerism in, 436—steam-boats for the rivers of, 664, 665, 666—sugars of, 796—suicide in, 799—woods of, XXI. 277—Timour's invasion of, 283—tobacco, 294—Wellington's despatches from, 817—weights and measures, 811—wool, 911—map of, XI. Plate. See East India Company, Hindus, Bengal, Calcutta, Clive, Hastings, Sepoys, &c.
 INDIA RUBBER, XII. 373. See Caoutchouc.
 INDIAN TERRITORY, in United States, XII. 373.
 — corn. See Maize.
 — cress, order of plants, V. 188.
 — cress, plant, V. 91, 188; XI. 745.
 — glue, X. 684.
 — ink, XII. 383—drawing in, VIII. 173.
 — ocean, XVII. 576—temperature of, 577—soundings of, 7040 fathoms in, 576—currents of, 579—active volcanoes in, XXI. 603.
 — summer, VI. 140.
 INDIANA, XII. 373; XXI. 419—debt of, 428—wines of, 888.
 INDIANAPOLIS, XII. 375, 374.
 Indianite, mineral, XV. 71.
 Indians, XI. 541—of Canada, VI. 146—of Bolivia, IV. 828—Mexico, XIV. 718—New York, XVI. 216—Honduras, XI. 610—in Indian territory, XII. 373—languages of the, XIII. 219 *et seq.*—charge of, in the United States, XXI. 429—wars with, 434.
 Indicative mood, X. 766, 790.
 Indicator, in mechanics, XIV. 404—pressure indicators of gasometers, X. 422—in steam-engines, XX. 596, 644—indicators, diagrams of, 597, 645—measurement of work done in the cylinder form, 601.
 — genus of birds, XVI. 778.
 Indicolite, mineral, XV. 89.
 Indiction, cycle of, VI. 81, 673; VII. 607.
 Indictions, XIX. 352.
 INDICTMENT, in law, XII. 375.
 Indigestion, in the domestic animals, XXI. 565. See Digestion.
 INDIGO, XII. 375; V. 190; VI. 518—in Hindustan, XI. 453—of Bengal, IV. 649—in Arabia, III. 358—Mexico, XIV. 717—Java, XII. 705—Nicaragua, XVI.

IND—INF

- 244—Amboyna, II. 660—Corfu, XII. 445—Persia, XVII. 421—its introduction as a dye-stuff, VIII. 274—its atomic constituents, *ib.*—its use in dyeing, *ib.*—indigo test in bleaching, IV. 763—unsuccessful attempts to cultivate it in Russia, XIX. 520.
- Individual, its meaning in psychology, XIV. 557, 587—in natural history, III. 174.
- Individuality, faculty of, XVII. 563.
- INDIVISIBLES, in geometry, XII. 376.
- Indo-European languages, XIII. 199, 206, 228; VI. 365; IX. 390.
- Indo-Germanic philology, XVII. 530, 531. See Arian Languages.
- INDORE, town in Hindustan, XII. 376—sepooy insurrection at, XVI. 310.
- INDORSEMENT, XII. 376—of bills, IX. 445, 446.
- Indragiri, in Sumatra, XX. 806.
- INDRE, in France, XII. 376.
- INDRE-ET-LOIRE, in France, XII. 377.
- Indris, genus of mammalia, XIV. 145.
- INDUCTION, XII. 377; XIX. 125—logic of, I. 803—Aristotle on, III. 555—inapplicable to moral philosophy, XV. 538—bearing of syllogisms on, XIII. 626—known before Socrates, XX. 398—much employed by him, 399.
- electrical, VIII. 555; I. 979—induction coils, XXI. 99 and *n.*
- magnetic, XIV. 21.
- Inductive science, philology an important branch of, XVII. 539.
- INDULGENCE, XII. 377—Luther's opposition to, XIII. 724.
- INDULT, XII. 378.
- Induration of building stone, XX. 735.
- INDUS, river, XII. 378; II. 202; III. 735; XI. 436, 450; XIII. 149; XVII. 606, 647; XX. 303—passed by Alexander the Great, XIII. 769—his voyage down the, 770—floods of, XVII. 600—valley of, 610.
- Indusium, in botany, V. 143.
- Industry, stimulated by indirect taxation, XXI. 57.
- Inertia, VIII. 330—moment of, XIV. 412; XIX. 431—of air, XVIII. 23—of machines, XIX. 437.
- Inescutcheon, in heraldry, XI. 330.
- INFALISTATIO, ancient punishment, XII. 379.
- Infallibility, popish doctrine of, XVIII. 318, 336—craving in the human mind for the existence of, I. 499—it relieves men from all care and trouble, 500—no such power exists, 527—many cling to the idea that it must be lodged somewhere on earth, 531—existed only in churches under the immediate care of the inspired apostles, 533.
- Infancy, XIV. 425.
- INFANT, in law, XII. 379.
- schools—in Belgium, IV. 618.
- Infanticide, XIV. 428—sanctioned by Aristotle, III. 568—in China, VI. 595—Cutch, VII. 598—Gujerat, XI. 92—Japan, XII. 690—secret society for, III. 676—in the South Sea Islands, 677; XVIII. 271—Oude, XVII. 19.
- INFANTRY, XII. 379. See Army.
- Infants, size and weight of, III. 2—skulls of, 28, 29—nursing of, XIV. 441. See Fetus.
- Infection, VII. 337—in the plague, XVII. 751.
- INFECTMENT, XII. 379.
- Inference, in logic, doctrine of, XIII. 601—character and kinds of, *ib.*—immediate categorical, *ib.*—by contra position, 602—by contradictory opposition, 603—by contrary and sub-contrary opposition, 604—by substitution, *ib.*—by conversion, 605—of constitution, 606—complex modes of, 629—from premises involving ultra-syllogistic subsumptions, 632—by combination of complex modes, 633.
- INFERLE, XII. 380; IX. 510, 513.
- Inferobranchiata, order of mollusks, XV. 371.
- Infidelity, in France before the Revolution, X. 47. See Atheism, Deism.

INF—INN

- Infinite series, II. 529.
- Infinitesimals, method of, IX. 713.
- Infinitive mood, X. 770.
- Infirmaries in London, XIII. 673—in Ireland, XII. 529. See Hospital.
- Inflammable minerals, XV. 122.
- salts, XV. 125.
- Inflammation, a disease, XVII. 690—treatment of, in animals, XXI. 555—of the stomach and other organs in cattle, 567 *et seq.*
- Inflatae, family of insects, IX. 236.
- Inflection, in optics, XVI. 605.
- of nouns, X. 748, 749; XIII. 192—of verbs, 189—whether an advantage or disadvantage, *ib.*
- Inflorescence of plants, V. 112—indeterminate, 114—determinate, 115—mixed, 117.
- Influenza, VI. 332—in horses and dogs, XXI. 572.
- Influx, definition of the word, I. 254.
- INFORMATION, in law, XII. 380.
- INFORMER, in law, XII. 380.
- Infusoria, III. 193—obscurity of their origin, 175—Lamarck's definition of, 194—Cuvier's arrangement of, *ib.*—Ehrenberg's, 211—method of feeding them with coloured substances, 208, *n.*—naked, 193—appendiculated, 202—fossil, XVII. 94.
- Ingemann (B. Severin), Danish author, XIX. 695.
- INGENHOUSZ (John), XII. 380—on the electricity of the torpedo, VIII. 573—his electrical machines, 605—on the composition of the atmosphere, IV. 180—on the gaseous exhalations of plants, V. 104—his opposition to Mesmer, XX. 417.
- Inglebert (St), justs of, VI. 618.
- Inglefield (Captain), his arctic voyage in 1852, XI. 40; XVIII. 173.
- Inglis (Captain), anecdote of, at the battle of Camperdown, V. 561, *n.*; VIII. 253, *n.* 2.
- on Dublin, VIII. 327—on Galway, X. 389.
- Ingolf, his colonisation of Iceland, XII. 197.
- INGOLSTADT, in Bavaria, XII. 381.
- Ingots, of gold, VII. 85—of silver, 86, 87.
- Ingpen (A.), his work on insects, IX. 15.
- Ingrafting. See Grafting.
- Ingrassias (J. P.), his contributions to anatomy, II. 759.
- INGULPHUS, abbot, XII. 381.
- Inhabitiveness, XVII. 562.
- INHIBITION, in law, XII. 381.
- Inia, genus of mammalia, XIV. 220.
- Inisfallen, lake, XIII. 73.
- Injection of vessels, in anatomy, II. 762—organs capable and incapable of, 806—jections for domestic animals, XXI. 556, *n.* 2.
- INJUNCTION, in law, XII. 382.
- INK, XII. 382—black, *ib.* 383—blue, *ib.*—sympathetic, 384; VI. 492; VII. 545—lithographic, XIII. 510—for transfers, 512—of the ancients, VIII. 42—ineffaceable, XIV. 527—red, XII. 383; VIII. 287—printer's, XII. 384; XVIII. 545—Indian, XII. 383—modes of effacing, XIV. 427—of ancient palimpsests, XVII. 215—China ink, VI. 599—ink-bag of the cephalopod mollusks, XV. 397.
- INKERMANN, XII. 384—battle of, *ib.*; XIX. 505.
- INLAND NAVIGATION, XII. 384. See Navigation (inland).
- letter office, XVIII. 404.
- INN, river, XII. 384; IV. 516; XX. 888.
- Innate ideas. See Ideas and Locke.
- Inner Temple, XII. 384.
- INNERLEITHEN, in Peebles-shire, XII. 385; XVII. 361.
- Innerlochy, in Inverness-shire, XII. 437—battle of, V. 406.
- Innervation, function of, XVII. 656, 668—diseases of, 697, 700.
- Innes (Cosmo), his Essay on the Ancient Inhabitants of Scotland, XIX. 741, *n.* 1—on Scotland, 743 *et seq.*

INN—INS

- Innis' filtering machine, IX. 582.
- Innisbofin, island, XIV. 370.
- Innisimurray, island, XX. 329.
- Innispatrick, islet, VIII. 215.
- Innisturk, island, XIV. 370.
- INNOCENT, Pope so named, XII. 385.
- III., XII. 385, 647—his proclamation of the fifth crusade, VII. 526—Inquisition established by, XII. 386—his dispute with King John, VIII. 676, 677—his proceedings against the Albigenes, II. 447; XII. 386; XXI. 508.
- VIII., his bull against the Waldenses, XXI. 508.
- Innocent's day, VI. 541.
- INNS OF COURT, XII. 384; XIII. 672—of Chancery, XII. 384—in Dublin, VIII. 223.
- INNSBRÜCK, or Insprück, Austrian city, XII. 386—university of, XXI. 492.
- Innuus, genus of mammalia, XIV. 141.
- Inoceramus, genus of mollusks, XV. 348—fossil, XVII. 106.
- Inoculation, XXI. 503—Condamine on, VII. 230, 231—a remedy for pneumonia, XVIII. 666—its adoption in France, X. 37—introduced into England, XV. 505.
- Inoperculata, section of mollusks, XV. 373.
- Inorganic bodies, II. 747—inorganic constituents of plants, 384.
- Inosinic acid, IX. 758.
- INQUEST, XII. 386. See Coroner.
- INQUISITION, XII. 386—introduced into Portugal, XVIII. 383—in Spain, XX. 465; Lope de Vega, secretary to the Spanish, XXI. 532—its sentence on Galileo, X. 379, *n.* 2—endeavours to introduce it into Holland, XI. 562, 564.
- Insalivation, XVII. 659—organs of, in the lower animals, III. 107. See Saliva.
- Insane, treatment of, at the beginning of this century, XIV. 528—proportion of, to the population, 529—modern treatment of, 537—laws regarding, 538—pathology of, 535.
- INSANITY, XII. 391; XVII. 700—its relation to genius and superstition, III. 320—in medical jurisprudence, XIV. 426—a bar to the execution of a criminal, 445—epilepsy with, 535—analogy between it and dreams, VIII. 176. See Mental Diseases.
- Inscriptions, French Academy of, II. 69—founded by Colbert, VII. 98—characters of abbreviations in, VI. 419—Egyptian, VIII. 441—on coins, XVI. 356, 381.
- Insectivora, XIV. 150—bones of, III. 80—dental system of, XVI. 450.
- INSECTS, XII. 391—their use in scattering pollen, V. 153—their injuries to plants, 173—in amber, II. 656—of Africa, 218—Madeira, XIII. 800—of India, XI. 457—stings of, XIV. 440—means of preventing their injuries to fruit-trees, XI. 758—order of their appearance in the strata of the earth, XVII. 92—fossil, 100, 102—eyeless species of, 630—hybrids, XII. 63—insect pins, XVII. 713—reason of some kinds being able to walk on the surface of water, XX. 753—noxious species, XXI. 549. See Entomology.
- Insessores, order of birds, XVI. 747.
- INSOLVENCY, XII. 391—of the American states, XXI. 441. See Bankruptcy.
- Inspectors of registration, XVIII. 835.
- INSPIRATION, XII. 391—of Scripture, XIX. 828; XXI. 217—was language originally given by? XIII. 187.
- Insprück, Austrian city, XII. 386.
- Instance courts, II. 146.
- INSTINCT, XII. 391; I. 404; IV. 576—Paley's view of, I. 225—weakened in animals by domestication, III. 175—in bees, IV. 576—in insects, IX. 55; pointers, XX. 218, 219.
- Instinctive medicine, XIV. 449.
- INSTITUTE (NATIONAL), OF FRANCE, XII. 392; II. 64; X. 99, 270—the Comptes Rendus, published by, III. 815—library of, XIII. 408; XVII. 282.
- of British Architects, III. 506.

INS—INT

- Institutes of Justinian, VI. 746.
- Institution (Roman Catholic), for the Propagation of the Faith, XV. 275.
- INSTRUMENTATION, in music, XII. 392.
- Instruments, musical, XV. 708—telegraphic, XXI. 99.
- Insubria, Hannibal's invasion of, VI. 294.
- Insular languages, XIII. 199, 217.
- Insulation of a line of telegraph, XXI. 97.
- Insulators, in electricity, VIII. 540; XXI. 95—in electric telegraphs, *ib.*, 96.
- INSURANCE, XII. 393—life, 394—fire, 416—marine, 419—at Lloyd's, XIII. 530—against fire, in London, 679—in book-keeping, V. 23—principle on which founded, XX. 552—average, IV. 323—in the Ionian islands, XII. 446. See Annuities, Life, Probability.
- Inta, African tribes, IX. 352.
- Intaglio, XIX. 845; XVIII. 520.
- INTEGRAL, or Integrant, XII. 424.
- calculus, IX. 714, 730.
- Integration, problem of, I. 644, 645—improvements in, 807—theory of, 822—of binomial differentials, IX. 724—by series, 726—of logarithmic functions, 727—of angular or circular functions, 728.
- Integrity of the Scriptures, XIX. 831.
- Integuments of plants, V. 74.
- Intellect, Aristotle on, III. 549.
- Intellectual education, XV. 810.
- faculties, in phrenology, XVII. 563.
- theories on the foundation of moral rectitude, XV. 548.
- INTERAMNA, now Terni, XII. 424.
- INTERCALARY, XII. 424; VI. 77, 79, 665, 669 *et seq.*
- Intercession of saints, XVIII. 337.
- Intercolumniation, in architecture, III. 510.
- Intercommuning, letters of, V. 429 and *n.*
- Intercostal muscles, their action in breathing, XVIII. 75.
- INTERDICTION, XII. 424, 382.
- INTERDICTION, XII. 424, 382.
- INTEREST, XII. 424; XV. 426, 427; XVIII. 217, *n.* 1—simple and compound, XII. 432—application of algebra to calculations of, II. 535—tables of increase of L.1 at compound, III. 253, 254—calculation of, 596—on accounts current, V. 30—in ancient Athens, IV. 217—in Spain, XX. 491—Turkey, XXI. 384—impolicy of limiting the rate of, VII. 199—in the Ionian islands, XII. 446—China, VI. 591—on deposits in savings-banks, XIX. 666—on deposits, not allowed by the Bank of England, XV. 473.
- Interference of light, XIII. 450; XVI. 598—fundamental law of, I. 897—of chemical rays, 922—of polarised light, XVI. 544—completes the theory of the rainbow, I. 898.
- INTERIM, name of a document, XII. 436.
- Interjections, in grammar, X. 788, 792.
- INTERLACHIN, XII. 436.
- INTERLOCUTOR, XII. 436.
- Intermaxillary bones of the mammalia, III. 78.
- Interment. See Burial.
- INTERMITTENT FEVER, XII. 436; XVII. 690—cinchona a specific for the cure of, VI. 727.
- International law, XIII. 253, 260—necessity for a code of, 282; its construction, 289—tribunal, *ib.*—copyright, VII. 360.
- Internodes, in botany, V. 78.
- Interregnum, XII. 436.
- INTERREX, XII. 436.
- Interrogation, point of, XVIII. 685.
- in rhetoric, XIX. 133.
- Interval, in music, XV. 704.
- Intestacy, law of, XVIII. 516.
- Intestinal worms, III. 175; XXI. 974—Bloch on, IV. 782—intestinal concretions, XVII. 691.
- Intestines, anatomy of the, III. 60—in the lower animals, 110—their length in proportion to that of the body in different animals, *ib.*—digestion in the, XVII. 660—excretion from, 667—of in-

INT—IPO

- sects, IX. 25—Oken's views as to the origin of, XVI. 499—obstruction of, in the domestic animals, XXI. 568. See Ichthyology, Ornithology, &c.
- INTONATION, in music, XII. 436.
- Intorcetta (Père) on China, VI. 570, 577.
- Intoxication, VIII. 196. See Drunkenness, Opium, Spirits, &c.
- INTRENCHMENT, XII. 436; IX. 805, 806.
- INTUITION, XII. 437; XIV. 556, 577—intuitive consciousness, 560—intuitive conception, 589.
- Intussusceptio, disease in the domestic animals, XXI. 568.
- Inuline, V. 72.
- Inundations of rivers, XVII. 603, 606, 607, 608—in France, in 1843, X. 217—at Petersburg, XVII. 487—of the Ganges, IV. 648; XVII. 606—Nile, VIII. 428; XVII. 600, 608; cause of, XVI. 269. See Deluge.
- Invasion, means of defence against, XXI. 701.
- Invention, musical, XV. 737.
- Inverarite, mineral, XV. 116.
- INVERARY, Scotch town, XII. 437—herring fishery at, III. 526; IX. 640, 642.
- INVERBERVIE, Scotch town, XII. 437; XIII. 839.
- Inveresk, XV. 744.
- INVERKEITHING, town in Fife, XII. 437; IX. 546.
- INVERLOCHY, or Innerlochy, in Inverness-shire, XII. 437—battle of, V. 406. — castle, XII. 439.
- INVERNESS, XII. 437—vitrified fort near, IX. 791.
- INVERNESS-SHIRE, XII. 438—agricultural statistics, XIX. 796, 797, 798—population, 799.
- Inverse problem, in perspective, XVII. 449.
- Invertebrata, characters of the, III. 185—their organs of smell, 94—their use as food, IX. 765—no lacteals in, XII. 27—order of their appearance in the strata of the earth, XVII. 92—fossil, 95.
- INVERTED, in music, XII. 440.
- INVERURY, Scotch town, XII. 440; II. 34.
- INVESTITURE, in law, XII. 440—of a knight, VI. 615.
- Invoice and invoice-book, V. 20, 21.
- Involucel, in botany, V. 114.
- Involucre, in botany, V. 114, 112.
- Involution, in algebra, II. 495.
- Io, probably connected with Egyptian mythology, XI. 385, n. 9.
- Iodic acid, VI. 470.
- Iodides, VI. 453, 470—of iron, 490—carbon, 474—mercury, 498—potassium, 485—sodium, 486—silver, 498—zinc, 491—lead, 497—phosphorus, 481. See Chemistry.
- IODINE, XII. 440; VI. 469; XV. 64—in plants, V. 97—Sir H. Davy on, I. 969; VII. 671—poisonous quality of, XIV. 435.
- Iodite, mineral, XV. 107.
- Ioh, Egyptian deity, XI. 383.
- Iolite, mineral, XV. 88—optical properties of, XVI. 666.
- IONA, island, XII. 440; VII. 154; XIX. 744, 751.
- IONIA, in Asia Minor, XII. 443—coins of, XVI. 376.
- IONIAN ISLANDS, XII. 444—weights and measures, XXI. 812.
- IONIC ORDER OF ARCHITECTURE, XII. 458; III. 516—its origin, 442—columns, 486—modern Italian, 451, 477—Greek, 461, 465—Roman, 475—derived by the Greeks from Assyria, XVI. 277.
- IONIC sect of philosophers, XII. 458. See Thales, Anaximander, &c.
- IONIUM MARE, XII. 459.
- IOWA, in North America, XII. 459; XXI. 419—debt of, 428—wines of, 888—river, XII. 460.
- Ipecacuan, V. 196—an antidote to the sting of the scorpion, VIII. 433, n.
- Ipek, town in Russia, XVII. 501.
- IPHICRATES, Athenian general, XII. 461.
- Iponomeuta, genus of insects, IX. 219.

IPS—IRE

- Ipsamboul, II. 74—temple of, XVI. 349.
- Ipsilante (Prince), XI. 23, 25.
- Ipsilanti (Demetrius), XI. 25.
- IPSWICH, town in Suffolk, XII. 461; XX. 790, 791—proposal for a wool staple mart at, XXI. 915.
- IRAK-AJEMI, Persian province, XII. 461.
- IRAK-ARABI, in Asiatic Turkey, XII. 461.
- Iran, plateau of, XVII. 597.
- Iranians, IX. 346.
- Irapuato, in Mexico, XIV. 724.
- Irawadi, river. See Irrawadi.
- Irbbit, Russian town, fair of, XIX. 543.
- IRELAND, XII. 462—history of, ib.—statistics, 503—Royal Irish Academy, II. 67—Irish alphabet, 616—cromlechs, III. 433—bagpipe, IV. 365—baronets of, 470—attempts of James I. to civilise it, V. 386—rebellion of 1641, 398—under William and Mary, 441 *et seq.*—invaded by James II., 442—battle of the Boyne, ib.; VIII. 179—treaty of Limerick, V. 443—Irish House of Lords deprived of all right of final jurisdiction, 456—measures in Parliament relative to, in the reign of George III., 507, 516—Irish proceedings as to the regency question, 533—invaded by the French, 480; X. 104, 109—rebellion of 1798, V. 563; XV. 528—union with Britain proposed, V. 566; carried into effect, 572—disturbances in 1805, 624—discussions on Catholic emancipation, ib., 625, 631, 638, 640, 642, 652—distress and disturbances in 1822, 634—discussions in Parliament regarding, in 1823, 638; in 1824, 640; in 1825, 642—Catholic association, 641, 642, 647, 653; suppressed, 655—passing of the Emancipation Act, ib.—disfranchisement of the forty-shilling freeholders, 656—repeal agitation in 1830, 659—passing of the Reform Act, 663—Coercion Bill, 663—measure regarding the Established Church in, 664—destitution in 1847 owing to disease in the potato crop, 670—Smith O'Brien's attempted rebellion, 614—Encumbered Estates Bill, ib.—bankruptcy system of, IV. 417—corn-laws of, VII. 384—agriculture, 385; improvement in, 392—influence of exportation of corn to Britain from, 391—amount of the corn exported, 401—coronach, 412—effects of the minute subdivision of land, 429, n., 430—effects of the cottage system in, 431—Cromwell's proceedings in, 612—cotton manufacture, 457—Earl of Essex's expedition to, 762—emigration from, VIII. 651—value of imports into, 734, 735; of exports, 736—shipping, 739, 742—exchange between Britain and, IX. 433—fisheries, salmon, 618; sea, 628—horses, XI. 662—office of arms for, 321—royal arms of, 323—sewed muslin trade of, X. 650—rate of interest in, XII. 429—variation of the needle, XIV. 53—militia, XV. 9—coal, XIII. 118; XV. 202—limestones, 147—Cambrian and Cambro-Silurian rocks, 196, 197—upper Silurian, 198—Devonian, 200—Carboniferous, 201, 202—Permian, 205—Triassic, 206—oolite, 208—chalk, 211—yield of its lead mines in 1854, 246—monarchy, 413—banks and banking, 487, 488—money, 435; XVI. 388—education, XV. 825—early newspapers, XVI. 184; number current, in 1857, 192—libraries, XIII. 403—light-houses, 482—iron ore, XII. 540—parliament of, XVII. 292—representative peers of, 293—franchise in, 294—heights of mountains in, 643—Pitt's policy towards, 740—police of, XVIII. 206—increase of population, 342—poor-laws, 298—post-office, 408—Presbyterianism, 491—registration, 841—prisons, 570—the Reformation in, 829—convicts in, 585—extent of railways in, 784—railway statistics, 786, 787 *et seq.*—Scots predominant in, XIX. 743—salt produced in, 585—savings-banks, 657—increase of the duties on spirits in, XXI. 73—quantity of spirits charged with consumption duties, 74—more fitted for

IRE—IRO

- grazing than tillage, 678—wool of, 907—Ordnance survey, 333, 334. Map of, XII., Plate. See Dublin, Grattan, O'Connell, Towers (Round), Cork, &c., &c.
- Ireland (New). See New Ireland.
- Ireleth rocks, XV. 198.
- IRENÆUS (St), XII. 535; IX. 492. — bishop of Lyon, ministers to the Waldenses in the Celtic tongue, XXI. 506.
- Irene, planet, IV. 91.
- IRETON (Henry), XII. 536—his proceedings in Ireland, 484.
- Iridaceæ, nat. order of plants, V. 211.
- Iridescence, XV. 58.
- Iridina, genus of mollusks, XV. 349.
- IRIDIUM, XII. 536; VI. 499; XV. 113; XVII. 622—specific gravity of, XII. 88—discovery of, XXI. 154.
- Iridosmium, XV. 113.
- Iris of the eye, III. 43; XIII. 461; XVII. 678—in the lower animals, III. 94. — planet, IV. 91. — plant, XII. 536; V. 212; XI. 750.
- Iriscope, XVI. 603.
- Irish, population in Glasgow, X. 649—in Canada, VI. 145.
- IRISH SEA, XII. 536—Irish cross-channel trade with Britain, 521.
- Irite, mineral, XV. 108.
- IRKUTSK, in Russia, XII. 536; XIX. 521.
- IRON, XII. 538; XV. 66—native, 114; XVII. 620—in chemistry, VI. 488—general use of wrought-iron, I. 875—transmission of sound by, II. 101—best kind for anchors, III. 121—aqueduct pipes of, 337—canal aqueducts of, 338—bridges of, 414; V. 355 *et seq.*; XII. 575—its influence on early civilisation, III. 422—compounds of, VI. 488—cast-iron, 489, 490—meteoric iron, 488; XVII. 620—in ashes of plants and in the soil, V. 98—crystallization of ores of, VII. 557 *et seq.*—cement for, VI. 368—oxides of, as mordants, VIII. 316—protochloride used for discharging colours, 317—for gun-barrels, XI. 96—specific gravity of, XII. 88—manufacture of, 538, 544—ores of, 539—conversion of crude into malleable iron, 552—strength and other properties of, 566—iron-trade, 573—in construction, VII. 322—unfitness of cast-iron for girders, 329—cast-iron cutlery, 602—magnetic power of, XIV. 3, 9—attracted by magnets, 19—effect of masses of iron on the attractive force of a magnet, 20—effect of heat on its magnetic power, 35—production of, 283—restrictions on the importation of, ib.—sparry iron, XV. 99—iron salts, 100—green iron earth, 101—iron sinter, ib.—specular, 108—mica-ceous, ib.—red, ib.—meteoric, XIV. 632, 535—distribution of, XVII. 621—iron roofs, XIX. 395—its first extensive use in ship-building, XX. 137—iron fastenings of timber, 174—for ship-building, ib.—strength of, 174, 175, 177, 178—Spartan money made of, 503—durability of, 178—weight, 179—expediency of a duty on exports of, XXI. 61. See Iron Bridges, Iron Manufactures, Iron Mines, Iron Ships.
- BRIDGES, XII. 575; III. 414; V. 355—at Sunderland, III. 414—Menai Bridge, XIV. 494; I. 875—Britannia tubular, ib.—article on, in this work, by Robert Stephenson, XX. 683.
- Crown, XII. 536—Napoleon crowned with, XV. 794.
- Manufacture, history of, XII. 538—processes and machinery employed in, 544, 558—statistics, 573—manufactures of, in France, X. 254—Prussia, XVIII. 669—Birmingham, IV. 731—Brazil, V. 299—Glasgow, X. 650—Newcastle, XVI. 167—Pennsylvania, XVII. 396—annealing of iron, III. 218—blueing, IV. 799—bronzing, V. 677—in Staffordshire, XX. 530—Spain, 490—Carron Iron-works, 703 (see that article)—Tennessee, XXI. 156—United States, 426. See Casting, Cutlery, Foundry, Gun-making, Hardware, Steel, &c.

IRO—ISH

- IRON MASK, the man of the, XII. 536 XIII. 342.
- Mines, of Bavaria, IV. 517—Belgium 624—Brazil, V. 292—Prussia, XVIII. 668—Europe, IX. 386—Scotland, XIX. 804—Malaga, XIV. 107—Derbyshire, VII. 754—Devonshire, 763—Cumberland, 577—Clackmannanshire, VI. 750—Mexico, XIV. 715—England, VIII. 726; XV. 219—Hindustan, XI. 457—France, X. 250—Monmouthshire, XV. 498—New York, XVI. 215—Norway, 322—Roscommon, XIX. 420—Russia, 543—Sweden, XX. 862—Switzerland, 889—Shropshire, 230—Sumatra, 804. See the geographical articles generally.
- Mountain, in Madagascar, XIII. 791.
- period, in archæology, III. 419.
- Ships, compared with wooden ones, XX. 183—destructive effects of shot on, XVI. 100; XX. 183—for purposes of war, ib.—details of building, 194—specifications for two iron ships, 197, 200.
- sulphate of. See Copperas.
- Iron-alum, XV. 97.
- Iron-clay, XV. 83.
- Iron-garnets, XV. 85.
- Iron-pyrites, XV. 115—its crystals, VII. 557.
- Iron-smelters, diseases of, XIV. 443.
- Iron-stone, clay, XV. 100.
- Irony, improper in history, X. 615—much used in conversation by Socrates, XX. 400.
- Iroquois, tribes comprehended under that name, II. 680; IX. 347—language, XIII. 223.
- IRRAWADDY, river, XII. 611; V. 778; IV. 312; XVI. 87; XVII. 607, 647.
- IRRIGATION, XII. 611—in Afghanistan, II. 202—Arabia, III. 344—Cambridgeshire, VI. 114—Circars, 729—Chile, 543—China, 588—Delhi, VII. 706—Egypt, VIII. 427, 428—Lombardy, XII. 622; XIII. 648—Java, XII. 705—Norway, XVI. 325—Persia, XVII. 421.
- Irritability of muscles, II. 822—of leaves, V. 108—Haller on, XI. 196.
- IRISH, river, XII. 623; XIX. 548.
- IRVINE, town in Ayrshire, XII. 623—harbour, IV. 333.
- (Dr), on heat, XI. 273, 274; I. 761, 926, 927—discovery of specific heat inadvertently assigned to him, 927, n. 1.
- Irving (Dr David), XIII. 402—his edition of Dempster's Ecclesiastical History, VII. 734—on Composition, XIX. 132, 133.
- (EDWARD), pulpit orator, XII. 623.
- (Washington), his Life of Columbus quoted, VII. 155 *et seq.*—his historical works compared with those of Robertson, XIX. 231, n.
- Irwan, Russian town, IX. 325.
- Irwell, river, XIII. 177—aqueduct over, III. 338.
- Is, bituminous fountains of, IV. 736. See Hit.
- Isaac (St), cathedral of, Petersburg, XVII. 490.
- Isabella, queen of Edward II., VIII. 682.
- II. of Spain, XX. 478.
- and Ferdinand, XX. 465.
- Isabnormal lines, chart of, XVII. 611.
- ISÆUS, Attic orator, XII. 624.
- Roman orator, XII. 624; XIV. 95.
- Isagoras, IV. 198.
- ISAHIAH, XII. 624—style of, XVIII. 98.
- ISAURIA, XII. 626.
- ISCHIA, island, XII. 626.
- ISCHL, town in Upper Austria, XII. 627.
- Ischnosoma, genus of fishes, XII. 249.
- Ischyodon, genus of fossil fishes, XII. 342; XVII. 119.
- Iseo (Lago d'), XII. 637; XIII. 644.
- Iser, river, IV. 517.
- ISÈRE, in France, XII. 627.
- river, iron bridge over, XII. 598.
- Iserine, XV. 109.
- ISERLOHN, Prussian town, XII. 627.
- ISERNIA, town of Naples, XII. 627.
- Iseum, temple of, VIII. 497.
- ISH, in Scotch law, XII. 627.
- ISHMAEL, XII. 627; III. 361; II. 47.

ISH—ITA

- Ishnik, or Isnik, XII. 628; XVI. 241.
 Isidorus of Charax, X. 467.
 — of Miletus, his plan for supporting the dome of St Sophia, III. 402.
 — of Pelusium, XII. 628 — of Seville, ib.
 ISINGLASS, XII. 628—as finings for beer, V. 330—its use in clarifying, VII. 755, 756.
 Isis, Egyptian deity, XII. 629; VIII. 438; V. 706; XI. 321; VII. 712—mysteries of, XV. 752.
 — English river, XVII. 36.
 — See Thames.
 ISKARDON, in Bulistan, XII. 629.
 Isla (De l'), his romance, XIX. 286.
 — DE PINOS, or Isle of Pines, XII. 629.
 — river, IX. 782.
 ISLAM, or Islamism, XII. 629. See Mohammedanism.
 Island, X. 483—emergence of volcanic islands, IV. 336, 337—Islands of Europe, IX. 385—in the Firth of Forth, 795.
 Islands of the Blest, XXI. 26.
 ISLAY, or Isla, island, XII. 629; XI. 278.
 ISLE, L', town in France, XII. 629.
 — French province, X. 276.
 — of France. See Mauritius.
 — OF PINES, XII. 629.
 — of Wight. See Wight.
 Islemge, Turkish town, XX. 39.
 Ismael Bey, VIII. 488.
 Ismaeliyah, Syrian sect, XX. 908.
 ISMAIL, in Moldo-Wallachia, XII. 629; VII. 654; XIX. 487.
 — (Shah), XVII. 438.
 ISMID, in Asia Minor, XII. 629.
 Isnardi (F.), his work on insects, IX. 22.
 Isnè, in Egypt, VIII. 513—zodiac at, ib.
 Isoarca, genus of mollusks, XV. 349—fossil, XVII. 106.
 Isocardia, genus of mollusks, XV. 150.
 Isochronism, in pendulums, VII. 3.
 ISOCRATES, XII. 629; XVII. 789; XX. 379, 395.
 Isodus, genus of fossil fishes, XVII. 125.
 Isogeothermal lines, XIV. 664.
 Isola bella, V. 54.
 — Madre, V. 55.
 ISOMERISM, XII. 630; VI. 450, 503.
 ISOMORPHISM, XII. 630; VI. 445, 446; XV. 62.
 Isoperimetrical figures, I. 643 and *n*—problems, V. 36; IX. 675, 676—Bernoulli's problem of, IV. 672.
 Isopoda, crustacea, VII. 542—fossil, XVII. 102.
 Isopyrite, mineral, XV. 82.
 Isosceles triangle, X. 507.
 Isothermal and Isochimal lines, V. 220; XIV. 664; XVII. 611.
 ISOTHERMAL LINES, XII. 630; V. 220; XIV. 664—Humboldt on, VI. 771; I. 993; VI. Plate.
 ISPAHAN, Persian city, XII. 630, 461—bazaars of, IV. 525.
 ISRAEL, a name of Jacob, XII. 631—land of, XVII. 181.
 ISRAELI (Isaac d'), XII. 631.
 Israelites, the date of their exodus, VIII. 458—their passage through the Red Sea, XVIII. 819—their proneness to idolatry, I. 464. See Jews.
 ISSOIRE, town of France, XII. 632.
 ISSOUDUN, town of France, XII. 632, 377.
 ISSUS, XII. 632—battle of, XIII. 767.
 — genus of insects, XII. 169.
 ISTALIF, town of Afghanistan, XII. 632.
 ISTHMA, festival, XII. 632—Isthmian games, X. 397, 398.
 Isthmus, X. 483.
 Istiurus, genus of reptiles, XIX. 32.
 Istius, genus of fossil fishes, XII. 347.
 Istmo, in New Granada, X. 797.
 ISTRIA, XII. 633; XIII. 309.
 Istrias (Count Capo d'). See Capo d'Istria (John).
 Isurus, genus of fossil fishes, XII. 345.
 Itacolumi, mountains, II. 670; V. 292.
 Itala version of the Scriptures, XIX. 840.
 Italian bibles, IV. 701—hours, VII. 796.
 Italians, their imaginative and reasoning powers, I. 203—skulls, III. 29.

ITA—IVY

- ITALY, XII. 633; IX. 403—metaphysical writers of eighteenth century, I. 201—first European country that cultivated algebra, II. 484—collections of bon-mots or Ana, 740—cultivation of anatomy, 735 *et seq.*—modern architecture of, III. 447, 449, 477, 517—pointed architecture, 448—domestic architecture, 473—influence of its architectural school, 453—commerce with Asia in the middle ages, 754—Austrian dominions in, IV. 308, 309—Bonaparte's campaigns, V. 558; X. 99 *et seq.*; XV. 786 *et seq.*—effects of the French occupation of, V. 615—Hannibal's invasion of, VI. 293; XIX. 310—cotton manufacture in, VII. 440—insurance originated in, XII. 394—its condition at the time of the Crusades, VII. 529—trade with England, VIII. 732, 733—revival of the drama, 143—tragedy, 147—comedy, 148—condition of the Jews in, XII. 781, 783—historical writers, XI. 548—libraries, XIII. 410—fairs, IX. 469—affairs of, in 1800, X. 116—miocene rocks of, XV. 214; pliocene, 215—metallic produce of, 248—monarchy in, 413—M. Guizot's policy towards, X. 230—newspapers of, XVI. 202—coins of, 358, 362, 387, 389—number of insane, compared with the population, XIV. 536—schools of painting, III. 709; XVII. 61, 81—revival of classical studies in fourteenth century, 522—heights of mountains in, 643—poetry of, XVIII. 109—political economists, 220—porcelain factories in, 438—the Reformation in, 828—sculpture, XIX. 858 *et seq.*—romance, 265, 284—revival of art in, 859—roads, 228—silk produced in, XX. 278—surgeons, 819—masonry, 711—universities, XXI. 448, 452, 492—wines, 886—woollen manufacture, 913—map of, XII. Plate. See Italian, Papal States, Two Sicilies, Lombardy, Rome, Naples, &c.
 Itata, river, VI. 543.
 ITCH, XII. 663—its connection with acari, III. 387.
 Itchin, river, XI. 203.
 ITHACA, island, XII. 663, 452.
 — town, XII. 663.
 Itineraries, ancient, X. 463.
 ITIUS PORTUS, XII. 663.
 Ittnerite, mineral, XV. 75.
 ITURBIDE (Augustin), XII. 663; II. 702; XIV. 709—711—his death, 712.
 ITURUP, one of the Kurile islands, XII. 663.
 Itzcoatl, Mexican king, XIV. 701.
 ITZEHOE, town of Denmark, XII. 663.
 Iulus, genus of myriapods, XV. 748, 747.
 Ivan VI., reign of, XIX. 482.
 — Vasilivitch, XIX. 472.
 — Vasilivitch, II. XIX. 473.
 Ivel, river, XI. 359; VIII. 111.
 Ivelchester. See Ilchester.
 IVES (St), town in Huntingdonshire, XII. 663.
 — in Cornwall, XII. 663.
 IVIZA, or Ilica, island, XII. 663.
 IVORY, XII. 663; XVI. 474, 476—skill of the Chinese in carving, VI. 586—of different animals, III. 105—specific gravity of, XII. 89—mines, II. 630—vegetable, V. 214—photography on, XVII. 551.
 — BLACK, XII. 665.
 — Coast, II. 227; XI. 89.
 — shells, XV. 387.
 — (JAMES), XII. 665; I. 823—his theorem on the attraction of ellipsoids, ib.—on atmospheric refraction, ib.—his estimate of the earth's ellipticity, 777—completed the demonstration of the earth's figure, IX. 552—on the orbits of comets, VII. 169—on the earth's figure as determined by hydrostatics, IX. 565, 570—his death, I. 824—character as a mathematician, ib.
 IVREA, town and province in Northern Italy, XII. 665; XIX. 640.
 Ivry-la-Bataille, XII. 665.
 IVRY-SUR-SEINE, French village, XII. 665.
 IVY, XII. 665; V. 195.

IVY—JAC

- Ivy, order of plants, V. 195.
 Iwan (Prince), VI. 335.
 IXION, XII. 665.
 Ixodes, genus of arachnides, III. 388.
 Ixolyte, mineral, XV. 124.
 Ixos, genus of birds, XVI. 752.
 Izard, quadruped, among the Pyrenees, XVIII. 700.
 Izarn (M.), on meteorolites, XIV. 633.
 Izmid, XII. 629.
- J**
- J, letter of the alphabet, XII. 666.
 Jabbock, river, XVII. 188.
 JABLONSKI (Paul Ernest), orientalist, XII. 666—his Hebrew Bible, XIX. 835.
 Jablonsky (C. G.), his work on insects, IX. 7.
 JACA, Spanish city, XII. 666.
 Jacamar-alcyon, bird, XVI. 774.
 Jacamars, birds, XVI. 774.
 Jacamerops, genus of birds, XVI. 774.
 Jacana, bird, XVI. 807.
 Jacchus, genus of mammalia, XIV. 144.
 Jacini (Signor), his work on Lombardy, XIII. 646.
 Jacintha, genus of mollusks, XV. 380—J. fragilis, ib.
 Jack-fruit, V. 206.
 Jackal, XIV. 164.
 Jackdaw, XVI. 764.
 JACKSON (Andrew), president, XII. 666; XXI. 441.
 — (Charles T.), on Lake Superior, VI. 138—on the geology of the United States, XV. 239.
 — (JOHN), portrait-painter, XII. 666.
 — (Mr), his watches, VII. 28.
 — (Mr), on wood-engraving, XXI. 903.
 — (WILLIAM), musician, XII. 667.
 — (Port), IV. 271, 273; XX. 895—shark, XVI. 424.
 — town, in Mississippi, XII. 667; XV. 278.
 — town, in Michigan, XII. 667—state prison at, XIV. 740.
 JACKSONVILLE, in Illinois, XII. 667, 361, 363.
 — in Florida, IX. 667.
 Jacob, son of Isaac, XVII. 192.
 — (Henry), early Independent, XII. 369.
 — on the precious metals, XVIII. 459, 460, 466.
 — (William), on the state of agriculture in Europe, II. 252—on the foreign corn-trade, VII. 402.
 — (St), Swiss Hamlet, XII. 667—battle of, XX. 844.
 Jacob's stone, XII. 463.
 Jacobi (C. G. L.), mathematician, I. 822, 823.
 — (F. HEINRICH), XII. 667.
 — (M. H.), his application of the principle of the rheostat, I. 984—his volta-type, 987; XXI. 635—on the applications of electro-magnetism, 643, 641—on magneto-electricity, 645, 646—his agometer, 625.
 Jacobinism, X. 122.
 JACOBINS (the), XII. 669; X. 49 *et seq.*; XIX. 234; XXI. 14.
 — religious order, VIII. 99.
 JACOBITES, XII. 669.
 — or Syrians, religious sect, in Syria, XX. 909.
 Jacobs, on the precious metals, VII. 191.
 Jacobson (Mr), on the lethargy of reptiles, XIX. 15.
 JACOBUS, gold coin, XII. 669.
 Jaconets, VII. 449.
 Jacotin (M.), on the superficies of Egypt, VIII. 420.
 Jacous, birds, XVI. 785.
 Jacquard (Joseph Marie), his career, XXI. 785—description of his engine, 786—mode of setting it, ib.—his loom applied to lace-making, XIII. 143; to net-making, XIX. 94.

JAC—JAM

- JACQUERIE, XII. 669; VI. 619; X. 19.
 Jacuby, river, XIX. 176.
 JADE, ornamental stone, XII. 669; XV. 82.
 Jaeger (Prof.), on a fossil reptile, XVII. 137.
 — (M.), on the electric pile, XXI. 619.
 JAEN, in Spain, XII. 670; III. 124; XX. 493.
 JAFFA, or Yaffa, XII. 670; XVII. 197—taken by Mahommed Bey, VIII. 488—massacre of, XV. 792, *n*; XVII. 198.
 Jaffler (Meer), XI. 484, 486.
 JAFNA, city in Ceylon, XII. 670.
 JAFNAPATAM, district in Ceylon, XII. 670.
 Jager (B.), his work on insects, IX. 15.
 JÄGERNDORF, Austrian town, XII. 670.
 Jagers, birds, XVI. 813.
 Jagery, Indian sugar, XX. 798, 796.
 Jaggard (Isaac), printer, XVIII. 538.
 JAGHIRE, XII. 670; XI. 513.
 Jago Cock, XVI. 789.
 Jaguar, XIV. 169; V. 294; XVII. 632—represents the tiger of the Old World, 630.
 Jahan (Shah), garden of, XVIII. 690.
 Jahanjir, mausoleum of, XVIII. 690.
 Jahrejahs, Indian tribe, XI. 92—their practice of infanticide, ib.
 JAINS, race of Hindus, XII. 670; XI. 468—temples in Gujerat, 92; VI. 112; and at Ajmeer, XI. 477—in Canara, VI. 162.
 Jalalean era, XVII. 487.
 Jalandar Doab, in the Punjab, XVIII. 687—city, 690.
 JALAP, XII. 671; V. 201.
 JALAPA, Mexican town, XII. 671; XIV. 726.
 Jalapine, XII. 671.
 Jalisco, Mexican state, XIV. 724, 718.
 JAMAICA, XII. 672—state of, in 1795, V. 557—thunder-storms in, XIV. 663—pepper, XVII. 710—attempts to grow mulberry-trees and produce silk in, XX. 295—its condition since the abolition of slavery, 327—Sloane's Natural History of, XX. 333.
 Jamb, in architecture, III. 510.
 Jamb-linings, in joinery, V. 752.
 JAMES, son of Alpheus, XII. 683.
 — son of Zebedee and Salome, XII. 683.
 — Epistle of, XII. 683.
 — (St), of the Sword, XII. 683.
 — (St), palace of, XIII. 668.
 — (St), park, XIII. 668.
 — I. of Scotland, XII. 683; XIX. 757—assassination of, 758—archery encouraged by, III. 425—his poetry, XVII. 120.
 — II. of Scotland, XII. 683; XIX. 758—his attachment to Edinburgh, VIII. 390.
 — III. of Scotland, XII. 683; XIX. 760—Edinburgh in the reign of, VIII. 390.
 — IV. of Scotland, XII. 683; XIX. 763—Edinburgh in the reign of, VIII. 391—his adventure at Cramond, VII. 479—large ship built by, XX. 126—his death at Flodden, IX. 665; VIII. 698.
 — V. of Scotland, XII. 683; XIX. 766—his knowledge of Latin, IV. 633, *n*. 6—Edinburgh in the reign of, VIII. 391.
 — VI. of Scotland and I. of England, XII. 683; XIX. 784, 786—his visit to Tycho Brahe, V. 265—G. Buchanan preceptor to, 718—Calderwood's interview with, VI. 72—University of Edinburgh founded by, VIII. 399; XXI. 481—Edinburgh in the reign of, VIII. 391—his visit to that city in 1617, 391—free-masonry under, XIV. 338. See next article.
 — I. of England, and VI. of Scotland—reign of, V. 381—character of, 388—Archbishop Abbot's flattery of, II. 15—archery in his reign, III. 425—architecture, 454—creation of baronets, IV. 469; VI. 623—translation of Bible, IV. 703—his Irish policy, XII. 479, 480—his treatment of Calderwood, VI. 72—his

INDEX.

JAM—JAR

navy, XVI. 92—state of naval affairs in the reign of, XX. 127—his embassy to Sweden, 848. See the preceding article.
James II. of England, XII. 683—his reign, V. 434—abdication, 439—expedition to Ireland, 442; XII. 489—death, V. 445—his residence in Edinburgh when Duke of York, VII. 629; VIII. 392—appointed Lord High Admiral, 85—his Parliament in Dublin, 218—his Irish policy, XII. 488—his navy, XX. 131.
—(G. P. R.), novels of, XIX. 281.
—(Mr), notice of his mission to Ashantee, III. 725.
—(Mr), his History of the Worsted Manufacture, XXI. 959, 918.
—(Sir Henry), superintendent of the Ordnance Map Office, XX. 452—on the use of zincography and photography in preparing the maps, XXI. 336, 337.
—River, in United States, XII. 683; XXI. 597—James River Canal, 754.
Jameson (Dr), on the tea-plant in India, XXI. 81.
—(GEORGE), painter, XII. 684.
—(ROBERT), professor of natural history in the University of Edinburgh, XII. 684—pupil of Werner, XXI. 834—on the Trepang of the Chinese, 985.
Jamesonite, mineral, XV. 119.
Jamestown, in St Helena, XII. 685; XI. 287.
JAMESON (Dr), XII. 685—on the songs of northern nations, IV. 396—on the Scottish language, VIII. 797—on Barbour, IV. 433, 434—his definition of black-mall, 740.
Jamin (M.), on the polarisation of light, I. 920—on optics, XVI. 550, 605, 680, 687—his improvements on flint-glass for telescopes, XXI. 122.
JAMYN (Amadis), French poet, XII. 685.
Janassa, genus of fossil fishes, XII. 342.
Janeiro. See Rio Janeiro.
JANESVILLE, town in Wisconsin, XII. 685.
Jani, his character of Alexander Cunningham, VII. 586.
Janiculum Hill, in Rome, XIX. 356, 357.
JANIZARIES, XII. 686; III. 656—institution of the, II. 735—origin of the name, XXI. 368—their instruction in European tactics, 373—destruction of, 374.
JANSEN (Cornelius), XII. 686.
—(Zachary), alleged inventor of the telescope, II. 87, n. 3; XIII. 449; XVI. 527—compound microscope, constructed by, 529.
Jansenists, their opinions on predestination, XVIII. 479.
JANSSEN (Cornelius), painter, XII. 687.
JANSSENS (Abraham), painter, XII. 687.
—(VICTOR HONORIUS), painter, XII. 687.
JANUARIUS (St), XII. 687—liquefaction of his blood, IV. 789.
JANUARY, XII. 687; VI. 77 *et seq.*—garden calendar for, XI. 758.
JANUS and JANA, Roman deities, XII. 687—temple of, 688; XIX. 332.
JAPAN, XII. 688—temples and idols, VII. 716, 718—monarchy in, XV. 413—language, XII. 217—peacock of, XVI. 786—Kämpfer's History of, XIII. 31—paper, XVII. 250—serpents of, 634—height of mountains in, 645, 646—silk, XX. 277—tea in, XXI. 81, 88, 89—weights and measures, 811.
JAPANNING, XII. 699.
Japheth, son of Noah, sons of, VIII. 45.
Jaquetot (Mr), on Leibnitz's theory of pre-established harmony, I. 124.
Jar, electrical, I. 737; VIII. 526, 611.
Jarbas, VI. 280.
Jardine (James), his Edinburgh water-works, III. 337; XII. 135—on the temperature of Scottish lakes at different depths, VI. 777—on hydrodynamics, XII. 76—on determining the point where a river ends and a firth begins, IX. 600.
—(Sir William), on the great lake trout, III. 156, n. 2, 157—his Ichnology of Annandale, XV. 205; XVII. 153—on

JAR—JEK

birds, XVI. 733, 753—on the Vendace, XII. 243.
Jargon of Ceylon, specific gravity of, XII. 88.
Jariyas, Nepalese tribe, XVI. 144.
Jarmuck, river, XVII. 188.
JARNACK, town in France, XII. 699.
Jarnowick, musician, X. 631.
JAROSLAV, or Yaroslaff, in Russia, XII. 699; XIX. 521.
JAROSLAVL, town of Russia, XII. 700.
JAROSLAW, XII. 700.
Jarta-war-nang, bird, XVI. 748.
Jartah, timber tree, XX. 173; XXI. 278.
JASHER (Book of), XII. 700.
Jasminaceæ, nat. order of plants, V. 199.
Jasmine flowers, in pyrotechny, XVIII. 707.
Jason, XIV. 420; XIII. 117—statue of, VIII. Plate.
Jasper, XV. 69—opal-jasper, ib.
Jassus, genus of insects, IX. 170.
JASSY, Moldavian city, XII. 701.
JASZ-APATHI, town of Hungary, XII. 701.
JASZ-BERENY, town of Hungary, XII. 306.
Jatrobdella, genus of annelides, XII. 701.
JAUER, town of Prussian Silesia, XII. 701.
Jaundice, disease among cattle, XXI. 570.
JAUTS, XII. 701; XI. 464—of Beykaneer, IV. 690—of Bhurtapore, 693—of Sindh, XX. 305.
JAVA, XII. 702—spiders' webs in, III. 375—commerce of, 757—bats of, XIV. 147—weasels of, 158—Hindu temples in, V. 275—extraordinary cloud in, VII. 39—language, XIII. 207—number of volcanoes in, XVII. 589; XXI. 605—flora of, V. 228; XVII. 628—number of serpents in, 634—height of mountains in, 645, 646—reptiles, XIX. 53 *et seq.*—sugar of, XX. 796—trade with Sumatra, 806—weights and measures, XXI. 811.
—Little island, IV. 395.
Javan and descendants, VIII. 45.
—poison, XIV. 438.
Jaw-bones, in man, III. 21, 23—in the mammalia, 78, 79—in birds, 85—muscles of the, 39.
Jawar Dagh, Syrian mountains, XX. 902.
Jaws, of insects, IX. 32—of fishes, XII. 223.
—tumours of the, XX. 834.
JAXARTES, river, XII. 711; XIII. 77; XIX. 549.
Jay (John), American chief-justice, XXI. 438—his mission to England, 758.
—(WILLIAM, D.D.), XII. 711.
Jays, birds, XVI. 764.
JEAN D'ANGELY (St), French town, XII. 712.
Jean-le-blanc, bird, XVI. 743.
Jeakes' patent grate, XX. 354.
JEBAIL, XII. 712. See Djebail.
Jebb (Sir Joshua), XVIII. 582.
Jebel Assoud, IX. 528.
Jed, river, XIX. 453.
JEDBURGH, Scotch town, XII. 712; XIX. 453.
Jedda, massacre at, in 1858, XXI. 376.
JEDDO, or JEDO, Japanese town, XII. 712, 690, 692—earthquake at, 689.
JEFFERSON (Thomas), XII. 712; XXI. 438, 439, 756 *et seq.*
—CITY, XII. 715.
Jeffersonite, mineral, XV. 81.
Jeffery's marine glue, X. 684; XX. 190.
JEFFREY (Francis), Lord Jeffrey, XII. 715—on Keats' Endymion, XIII. 57—on Campbell's poetical genius, VI. 126—his quarrel with Moore, XV. 530—his review of Wordsworth's poetry, XXI. 931—on the character of Watt, 777.
—(Mr), on Hawick moat, XI. 246—his history of Roxburghshire, XIX. 452, n.
JEFFREYS (George), Lord, judge, XII. 719; V. 435—his trial of Richard Baxter, IV. 521—his "bloody assize," VIII. 107.
Jegher, wood-engraver, XXI. 904.
Jehan (Shah), XI. 479; VII. 706.
Jehangeer, mausoleum of, XIII. 153.
Jehoshaphat (Valley of), XII. 736.
Jehovah, XXI. 188.
Jejunum, III. 60.
Jekaterinoslav, VIII. 520.

JEL—JES

JELALABAD, city of Seistan, XII. 719.
—town of Afghanistan, XII. 719—defence of, by Sir R. Sale, V. 668; XI. 509.
JELATMA, Russian town, XII. 719.
JELEZ, Russian town, XII. 719.
Jelizabetpol in Georgia, VIII. 634.
Jelizabetgrad, in Southern Russia, VIII. 634.
Jelum, or Jilam, river in the Punjab, XII. 63; XVIII. 687, 688.
Jellachich (Bam), IV. 307.
Jelly, X. 445—sea-jellies, XXI. 995.
Jemaleddin, Arabian author, VI. 242.
JEMAULABAD, town and fortress in India, XII. 719.
JEMMAPEZ, XII. 719—battle of, V. 544; X. 71.
JENA, German town, XII. 719—battle of, X. 143—university of, 592; XXI. 492.
Jenison-Walworth (R. von), his works on insects, IX. 18.
Jenkin (F.), on electric telegraphs, XXI. 95, 97, 114, n.
Jenkins (William), his coal-burning locomotives, XX. 358.
Jenkinson. See Liverpool, Earls of.
JENNER (Dr), XII. 720—pupil of J. Hunter, 27—his discovery of vaccination, XXI. 500; held that cow-pox was small-pox modified, ib.
—on intestinal worms, XXI. 976.
Jennings' lock, XIII. 539.
—draining pipes, VIII. 129, n.
Jenny, spinning, III. 609; VII. 441; XX. 510—mule, VII. 445; XX. 510.
Jenour (Mr), wire-cartridges invented by, XX. 214.
—(Mr), on the lizard, XIX. 30.
Jensen's marine governor, XX. 654.
Jenson (Nicholas), printer, XVIII. 532.
JENYNS (Soame), XII. 726—Dr Johnson's review of his Inquiry, 798.
Jer-falcon, XVI. 745.
Jerboa, in zoology, XIV. 184.
JEREMIAH, prophet, XII. 726; XVIII. 98.
Jerez, wine district of, XX. 489.
JERICHO, XII. 727—plain of, XVII. 186.
Jerningham (Capt.), his anchor, XIII. 445.
JEROME (St), XII. 727—alphabet of, II. 614—his arguments against the superiority of bishops to presbyters, XVIII. 483—his version of the Bible, IV. 701; XIX. 840.
—of Prague, XII. 728, 59.
JERSEY, XII. 729—breed of cattle, II. 342—harbour of refuge at, XI. 222—attacked by the British in 1779, V. 488.
—CITY, in New Jersey, XII. 731.
Jerubbaal, X. 621.
JERUSALEM, XII. 731—taken by Antiochus, 769; XVII. 193; by Pompey, 770; 194—destroyed by the Romans, XII. 774; XIX. 339; XVII. 194—rebuilt by Hadrian, XII. 775; XIX. 343—Julian's attempt to rebuild the temple, II. 644; XII. 776; XVII. 195—taken by the Persians, ib.; by Omar, 196; by the Crusaders, ib.; VII. 525; by Saladin, ib.; VIII. 481; XVII. 196—retaken by the Crusaders, 197—sacked by the Mamelukes, ib.—taken by the Mamelukes, ib.—under Selim I., 198—patriarch of, XI. 36—monarchy in, XV. 413—walls of, IX. 814—return of the Jews to, XII. 767—kings who reigned in, XVII. 193—itinerary, X. 463. See Crusades, Temple of Jerusalem.
—cotton, IV. 525.
—Talmud, XXI. 15, 16—Targum, 23.
Jerusalem Artichoke, XI. 739; II. 321; IX. 760.
JERVIS (Sir John), earl St Vincent, XII. 748—his naval victory, V. 559.
JESI, Italian city, XII. 749.
Jesse (Mr), on eels, XII. 230.
JESSELMERE, in Hindustan, XII. 749.
Jesses, in falconry, XI. 248.
Jessop (Mr), his account of peas-blossom damp, VII. 643.
JESSORE, in Bengal, XII. 749; IV. 651.
Jessup's iron bridges, XII. 582.

JES—JEW

JESUITISM, XII. 749—in Brazil, V. 281 *et seq.*—in Peru, XVII. 471—Paraguay, II. 691, 692; XVII. 268—Japan, XII. 697—Polynesia, XVIII. 269—suppression of, in France, X. 36, 37—Pascal's exposure of, XVII. 330. See Jesuits.
Jesuits, their method of reducing the indigenous Americans to a settled mode of life, II. 687, 691—their opposition to Pascal's discoveries, IV. 450, 451—proceedings in France in reference to, X. 223—their influence in France, in the reign of Charles X., 189—founders of the society of, XII. 750—its early fathers, 751—their opinions on predestination, XVIII. 479—their missionary exertions, XV. 275. See Jesuitism, Jansenites.
Jesuit's bark. See Cinchona.
JESUS, XII. 757—alleged letter of to Abgar, II. 40—date of his birth, VI. 667, 669—years between Adam and the birth of, 669—dæmons cast out by, VII. 618—Gnostic conception of, X. 687—pictures of, XVII. 59; XII. 764, 765—opinions of Mahommed regarding, XV. 303—the Messiah, XXI. 207—the person of, 208—reference to, by Josephus, XIII. 9—doctrines he taught, I. 481—his person the temple of the Lord, 483—understood by the Jews to lay claim to a divine character, 486. See Christ, Messiah, Theology.
—Order, or Society of. See Jesuitism.
—the son of Sirach, XII. 765; VIII. 372.
Jesus' College, Cambridge, XXI. 465—its foundation, II. 453—Oxford, XXI. 459.
Jet, XV. 123.
Jets of water, XII. 129, 156—jets of fire, XVIII. 707.
Jetsam, IX. 668.
Jetties, in rivers, XVI. 67.
Jetzer, tragic fate of, VIII. 100.
JEWEL (John), bishop, XII. 765.
—See Gem and Jewellery.
Jewellery, manufacture of, in France, X. 255—cements for uniting articles of, VI. 368—universal use of, in India, XVIII. 470.
JEWS, XII. 766—history of, XVII. 193—belief of a future state among, I. 475, 476—their expectation of the Messiah, 480—notion of their national pre-eminence, 485, 489—distinguishing features of the gospel very unlikely to occur to, 489—frivolous regulations regarding worship, 497—in the different countries of Europe, IX. 395; in Abyssinia, II. 56; Alexandria, ancient and modern, 470, 473; Arabia, III. 362; Austria, IV. 317; Algiers, II. 566; Bukhara, V. 758; the Crimea, VII. 504; Egypt, VIII. 449, 472; England, 675; XII. 428; Germany, X. 588; Frankfurt, 288; Greece, XI. 20; India, 464; Holland, 588; Ionian islands, XII. 447; Italy, 634; Morocco, XV. 597; Hamburg, XI. 199; Jerusalem, XII. 747; in the Two Sicilies, XX. 255; Poland, XVIII. 160—agriculture, II. 249—punishment of adultery, 156—their altars, 631; III. 433—analogy of Jewish and Mexican cosmogonies, II. 695—their assistance to Demetrius, III. 273—demonology, 321—architecture, 439—baptism, IV. 422, 423—beard, 527—use of bells, 628—bibles, 694 *et seq.*—burials, V. 774—Babylonish captivity, VI. 226—Caraites, 228; VII. 504—the Chinese not descended from, VI. 557—were they long ignorant of a future state? 637, 638—their enmity to the Christians, 640—their year and eras, 669—months, 670—circumcision, 732—coins, VII. 66—diversity of complexion in different parts of the world, 225—hours, 796—house built by Henry III. for converts, 338—weights and measures, 580—belief in demoniac possession, 617; and magic, XII. 761—dancing, VII. 645—their connection with Egypt, VIII. 458; exodus thence, ib.; policy towards, 459—

JEW—JOH

law of divorce, 67—places of worship in England and Wales, 745—severities of Ptolemy Philopater towards them, 469—their fasts, IX. 489—funeral rites, X. 343—geometry, 503—burning of incense, XII. 366—Josephus's History and Antiquities of, XIII. 10—jubilee, 14—libraries, 382—treatment of the hair, XI. 182—mourning, XV. 667—oaths, XVI. 398—oracles, 699—monarchies, XV. 413—ancient art, XVII. 47—severities of Antiochus Epiphanes towards, 193—art of writing among the ancient, 401—philology among, 521—passover, 333—patriarchs, 342—their admission into parliament, V. 672; XVII. 295—primogeniture among, XVIII. 515—in Prussia, 664—poetry of, 97—law concerning rape, 806—persecuted by Trajan, XIX. 342—conquest of, by Hadrian, 343—sanhedrim, 600—emancipation of, in Russia, 492; number in that kingdom, 529, 523—manner of observing the Sabbath, 561, 562—their care in preserving the integrity of Old Testament Scriptures, 831—their expulsion from Spain, XX. 465—Dr Spencer on their ritual, 504—synagogues, 898; I. 490—slavery, 319—their surgery, XX. 809, 816—in Syria, 909—in Turkey, XXI. 378—tabernacle, 1—Talmud, 15—measures, 804. See Hebrew, Jerusalem, Mosaic Dispensation, Caraites, Talmudists.

JEW'S-HARP, XII. 784.

JEYPOOR, in Hindustan, XII. 784.

JEZIREH-EL-OMAR, town in Asiatic Turkey, XII. 784.

JEZEEL, town of Issachar, XII. 784—valley of, XVII. 183.

JHALAWAN, in Beloochistan, XII. 784.

JHANSI, town in Hindustan, XII. 784; V. 763—sepoys' insurrection at, XVI. 310.

Jharejah Rajpoots, VII. 598.

JHUJHUR, in Hindustan, XII. 784.

JHYLUM, or Jelum, river, XII. 785.

JIDDA, or Djidda, Arabian seaport, XII. 785—commerce of, III. 355; XVIII. 818.

Jig, dance tune, X. 622.

Jihon. See Oxus.

Jilam, in the Punjab, XVIII. 690, 691. See Jhyllum.

JIONPOOR, in Hindustan, XII. 785.

JITOMIR, Russian town, XII. 786.

Joachim, I. and II. electors of Brandenburg, XVIII. 647.

JOAN OF ARC, XII. 787; III. 399; X. 23; XVI. 722.

— of Kent, VII. 483.

— (Pope), XII. 786.

JOANNES, island, XII. 787.

Joaquin (San), river, VI. 96.

Job, Book of, XII. 787; XVIII. 98—scene of, XII. 359—his description of the war-horse, XI. 656—Targums on, XXI. 24.

Joceline, bishop, X. 646.

Jochanan (R.), Jerusalem Gemara said to have been written by, XXI. 15.

Jockey, XI. 686 *et seq.*

Jockeyship, XI. 686.

JOEL, the prophet, XII. 788—style of, XVIII. 98.

Joffred, abbot of Croyland, XXI. 460.

Joggles in beams, XX. 767.

JOGHIS, religious sect, XII. 788.

JOQUES, Hindu eras, XII. 788.

JOHANNA, island, XII. 789.

JOHANNISBERG, German village, XII. 789—vineyards of, XV. 801; XXI. 885—qualities of their wine, ib.

Johannite, mineral, XV. 98.

JOHN THE BAPTIST, XII. 789—death of, III. 275.

— (Don) of Austria, Turkish fleet destroyed by, at Lepanto, XXI. 369.

— emperor of the East, VII. 316.

— king of England, XII. 792; VIII. 676—his proceedings in Ireland, XII. 469—his fleet, XVI. 89; XX. 120.

— king of France, XII. 792; X. 18.

— name of, 23 Popes, XII. 791.

JOH—JOI

John of Arder, XX. 817.

— of Gaddesden, XX. 816.

— of Salisbury, XII. 792.

— I., II., kings of Castile and Leon, XII. 792.

— I., II., III., IV., V., VI., kings of Portugal, XII. 792; XVIII. 382, 383, 386, 388, 389.

— I., II., III., kings of Sweden, XII. 792; XX. 847.

— VI. (Don), V. 286.

— (Presbyter), XIX. 98.

— (St) the Apostle, XII. 790—Gospel of, ib.—Epistles of, 791—Apocalypse, or Revelation of, III. 297; XIX. 98.

— (St), knights of, XIII. 114; XIX. 148.

John's (St), College, Oxford, XXI. 459—Cambridge, 466.

— (St), in Newfoundland, XVI. 171.

— (St), town in New Brunswick, XVI. 164—river, 162, 163.

— (St) wort, nat. order of plants, V. 186.

JOHN, or JAN (St), West Indian island, XII. 792.

Johnius, genus of fishes, XII. 285.

Johnson (E. C.), on typography for the blind, IV. 781.

— (Dr George), his work on mollusca, XV. 328—his article on zoophytes in the seventh edition of this work, XXI. 974—his work on British zoophytes, 1002, n.—on sponges, 1008—on the annelides, XI. 300, n. 2.

— (Dr James), instance of coincidence in discovery related by, XX. 811, n.

— (Henry), his logographic printing, XVI. 187.

— (Hester), XX. 871, 873.

— (John), on woollen manufactures, XXI. 915.

— (Keith), his physical atlas, XVII. 613, 614, 617, 642—on the distribution of birds, 633.

— (Mrs), her novels, XIX. 282.

— (SAMUEL), XII. 793—his opinion of Rochefoucauld's maxims, I. 54—his characters of Akenside, II. 434; Sir Thomas Browne, V. 687; Burman, 786, 787, 788; Denham, VII. 737; Cowley, 471; Dryden, VIII. 204; Jenyns, XII. 726; Bolingbroke, IV. 816—on Hector Boyce, V. 252; Mallet, XIV. 111; Fenton, IX. 509; Edmund Smith, XX. 346; Thomson, XXI. 234, 235, 236—Boswell's life of, V. 64—Dr Brocklesby's kindness to, 674—his friendship with Garrick, X. 406; Goldsmith, 706 *et seq.*; Mrs Piozzi, XVII. 714; Sir J. Reynolds, XIX. 101—on the poetry of the Duke of Buckingham, XX. 99—on Lord Hailes' Annals of Scotland, VII. 634—works of Congreve, 248—on Iona, XII. 441—his tour in the Hebrides, V. 64—his opinion of the newspapers of 1758, XVI. 184—on Ossian, XVII. 6; Roscommon, XIX. 423—his tales, 275—on Rowe's plays, 451—his translation of Lobos' history of Ethiopia, XIII. 531—his alleged meeting with Adam Smith, XX. 343, n. 2—his antipathy to Swift, 878 and n. 2—his fondness for tea, XXI. 83.

Johnson's catalogue of stars, IV. 95.

JOHNSTON (Arthur), XII. 803.

— (Cuthbert W.), on goats, II. 354.

— (John), on animals, XIV. 125—on birds, XVI. 725.

— (Prof.), his analysis of barley-flour, V. 321.

Johnstone (Charles), novels of, XIX. 275.

— (ROBERT), historian, XII. 804.

— (Sir W. Pulteney), chair of agriculture in university of Edinburgh founded by, XX. 338, n. 2.

— in Renfrewshire, XII. 804.

JOHORE, Malay town, XII. 804.

JOIGNY, town of France, XII. 804.

Joiners, distinguished from carpenters, V. 746—work of, in building, 750—qualifications of, XII. 800—measuring and

JOI—JON

valuing joiners' work, V. 753—health of, XIV. 442.

JOINERY, XII. 804—not much practised among the Romans, III. 445. See Roof.

JOINT-STOCK COMPANIES, XII. 817; VII. 218; XVII. 316—defective state of the law regarding, 317—undertakings which may be successfully carried on by, 317.

— Banks. See Banks.

Jointed-fir order of plants, V. 201.

Joints, in carpentry, VI. 260; XII. 809—in stratified rocks, XV. 163—universal joint, XIV. 399—of arches, XX. 728 *et seq.*

— of bones, II. 830—of the spine, III. 4 *et seq.*; shoulder, elbow, wrist, and fingers, 34; hip, 36; knee and ankle, 37—diseases of, in cattle, XXI. 558—surgical treatment of diseases of the, XX. 823—resection of, 825.

JOINVILLE, French town, XII. 819.

— (JEAN) SIRE DE, XII. 819—his Memoirs quoted, VI. 621; VII. 534.

— (Prince de), his expedition to St Helena, X. 215—marriage, 219—bombardment of Tangier, 221—his letter to the Duke de Nemours, 230.

Joists, construction of, V. 748—the strongest not those which contain the greatest quantity of timber, XX. 766—to form them of uniform strength, 769.

Joktan, III. 361.

JOLIBA, XII. 820; II. 210. See Niger.

Jolofs, African people, XX. 50. See Yolofs.

Joly (Abraham), on mortality at Geneva, XV. 622.

Jolyffe, his discovery of the distinction between the lacteals and lymphatics, II. 761, 803.

JOMELLI (Nicolo), XII. 820.

Jomini (Baron), on the military character of the French, 639, 642; Spaniards, 643; Russians, 649, n. 4; Prussians, 646, n. 4; British, 667—on war, XXI. 698, 700, *et seq.*—on the English infantry at Talavera, 823.

JONAH, XIII. 1—alleged tomb of, XVI. 273, 275.

Jonathan Ben Uzziel, his Targum, XIX. 839; XXI. 23.

Jondisabour, in Chorassan, medical school at, XX. 814, 815.

Jones (Col.), on piers for harbours of refuge, XI. 218.

— (David), on life assurance, XII. 404.

— (Edward Thomas), on book-keeping, V. 15, 27.

— (INIGO), XIII. 2—his architectural works, III. 454—on Stonehenge, XX. 709.

— (Jenkin), his tables of annuities, &c., XII. 402.

— (Jeremiah), on the Apocryphal books, VII. 298.

— (John Gale), V. 607.

— (JOHN PAUL), XIII. 2; V. 495 n.

— (Sir John), on sieges, IX. 824, 825—on Torres Vedras, 806.

— (Richard R.), linguist, XIX. 419.

— (Rymer), on the earthworm, XI. 301—on leeches, 304.

— (SIR WILLIAM), XIII. 3—his reply to Anquetil du Perron, III. 259—on the Asiatic races, 747—on Buddhism, V. 725—on the Hindu origin of chess, VI. 537—on the Chinese, 557, 558—his character of Lord Ashburton, VIII. 260—on language, XIII. 207, 208—on absorption, as one of the doctrines of the Vedanta school, I. 147, n.—on the law of evidence, VIII. 790.

— (Thomas), his optigraph, VI. 119—his mural circle, IV. 152.

— (Wharton), on the blood of fishes, II. 785.

— (WILLIAM), divine, XIII. 3.

Jones's hydrometer, XII. 86.

— Historical Sketch of the Electric telegraph, XXI. 107.

JONKOPING, in Sweden, XIII. 5; XX. 864.

Jonnè's (Col. Moreau de), his account of a species of serpent, XIX. 67, 68.

JON—JUD

JONSON (Ben), XIII. 5—on Bacon's forensic eloquence, I. 239—his admiration of Bacon, ib.—his merits as a dramatist, VIII. 158—his visit to Drummond, 191—epitaph on the Countess of Pembroke, IX. 283—poetry of, XVIII. 122—his notice of Spenser, XV. 506.

— actor, XXI. 175.

JOORLA, seaport in Hindustan, XIII. 7.

JOPPA, XIII. 7. See Jaffa.

— genus of insects, IX. 188.

Joravko (P.), his work on insects, IX. 22.

JORDAENS (Jacob), painter, XIII. 7; XVII. 75.

JORDAN, river, XIII. 8; XVII. 184, 186, 591, 647.

Jornandes, Gothic author, X. 729.

JORTIN (John, D.D.), XIII. 8—on the style of Erasmus, IX. 323—on the work of Erasmus, De libero arbitrio, 321.

JORULLO, volcano, XIII. 8; II. 674; XIV. 714, 724; XXI. 605.

JOSEPH I., emperor of Germany, XIII. 8.

— II. emperor of Germany, XIII. 8; IV. 304, 595—his plan for exchanging the Austrian Netherlands for Bavaria, V. 516.

— I. of Portugal, XVIII. 386.

— the Blind, his Targum, XXI. 23.

— son of Jacob, XVII. 192—date of his becoming governor of Egypt, VIII. 458.

— tribe of, XII. 767.

Josephine, empress of France, her marriage with Napoleon, XV. 785—crowned, X. 134—divorce, 153.

JOSEPHUS (Flavius), Jewish historian, XIII. 8—his reference to Christ, XII. 760—his account of Jerusalem, 736—his account of the Essenes, IX. 334, 335; of the Pharisees, XVII. 505.

JOSHUA, XIII. 10; XII. 766.

Josiah, king of Judah, his engagement with Neko, VIII. 464.

Josika (Baron), Hungarian author, XII. 20.

Jotapata, in Galilee, XIII. 9.

Jouannetia, fossil mollusks, XVII. 108.

Joubert (General), X. 104, 113 *et seq.*

— on the manufacture of tobacco, XXI. 296.

JOUDPOOR, in Hindustan, XIII. 10.

JOUFFROY (Theodore-Simon), XIII. 10—on the limits of psychology and physiology, XIV. 556, n. 2.

— (Marquis de), his steam-boat, XX. 637.

Joule (Mr), on the mechanical effect of heat, I. 942; XI. 276—on atomic volumes, VI. 449—his "equivalent," XIV. 408; XX. 618—on the use of electricity and magnetism in mechanics, 418—on the relation of heat and work, 561—on the application of electro-magnetism, XXI. 643.

Jourdan (General), X. 88 *et seq.*—his campaign of 1796, V. 563; XI. 276.

Journal, in book-keeping, V. 16, 18, 21—collective entries in, 28.

— of a ship, XVI. 25.

JOVELLANOS (G. Melchior de), XIII. 11; IV. 156; XVII. 28, 29.

JOVIANUS (F. Claudius), Roman emperor, XIII. 12; VII. 309.

JOVIUS (Paulus), historian, XIII. 12.

Joy, death from excess of, VIII. 192, n. 1.

Joyce's country, in Galway, X. 388, 389.

Juan (Don), of Austria, XI. 569, 570.

— (Don Jorge), his secret report to the Spanish government, IV. 830.

— FERNANDES, island, XIII. 13.

— II., of Aragon, XX. 464.

— (San), river in Nicaragua, XVI. 242, 243.

JUBA I., king of Numidia, XIII. 13; XVI. 350.

— II., XIII. 13.

Jubbulpore, in India, Sepoy insurrection at, XVI. 311.

JUBILEE, XIII. 14—in Paris, X. 192.

Juckes' patent furnace, XX. 356.

Judah, XII. 767—country of, XVII. 184.

JUDAS MACCABEUS, XIII. 14; XII. 769, 733.

JUD—JUN

- Judas trees, XVII. 763.
 JUDE, XIII. 14—epistle of, 15.
 JUDEA, XIII. 15; XII. 768; XVII. 183—
 coins of, XVI. 379.
 JUDENBURG, in Styria, XIII. 15.
 Judge-legislation, XIII. 268, 269.
 Judges, duties of, according to the eco-
 nomists, VIII. 381—their character in
 former times, 774.
 Judgment, in metaphysics, XIV. 591—
 necessary, 597—right of private judg-
 ment in religious matters, I. 540—an
 unavoidable necessity for the exercise
 of it, 541—responsibility of, ib.
 —, in law, VIII. 791.
 —, in logic, XIII. 568—Kant on, 51
 necessary to the character of a poet,
 XVIII. 94.
 —, last XXI. 219.
 Judicature, XIII. 275.
 Judicial proceedings in England, VIII.
 788; XIII. 274.
 —evidence, IX. 418.
 —combat, VI. 611—power in Eng-
 land, VIII. 772.
 Judiciary of the United States, XXI. 429.
 Judson (Mr), American missionary, V.
 782.
 JUGDULUK, in Afghanistan, XIII. 15.
 JUGGERNATH, XIII. 15; VII. 602; XI.
 470.
 Jugglers, Hindu, IV. 525.
 Juglandaceæ, nat. ord. of plants, V. 208.
 Jugulares, fishes—their fins and pelvis,
 III. 90, 91.
 JUGURTHA, king of Numidia, XIII. 15;
 XVI. 350—his war with the Romans,
 XIX. 318.
 Juice of plants. See Sap.
 —of the sugar cane, XX. 792.
 Jujubes, V. 189.
 Jujuy, in La Plata, XVII. 779.
 Julia, XIX. 333.
 —, lex, XIX. 320.
 Julian Alps, II. 624.
 —, CALANDAR, XIII. 16; VI. 77, 81,
 665.
 —era, VI. 672.
 —period, VI. 81, 665.
 —(Port San), XVII. 335.
 JULIANUS (F. Claudius), Emperor, XIII.
 16; VII. 305 *et seq.*—apparition seen
 by, III. 311—his attempts to rebuild the
 temple at Jerusalem, II. 644; XII. 776,
 734, 744; XVII. 195.
 —(Didius), XIX. 346.
 JULICH, Prussian city, XIII. 17.
 Julien (M.), his translation of a Chinese
 work on the silk-worm, XX. 287.
 JULINDER DOOAB, in India, XIII. 17.
 Julia, genus of fishes, XII. 267.
 JULIUS I. (Pope), XIII. 18.
 —II. (Pope), XIII. 18; XVII. 64.
 —III. (Pope), XIII. 18.
 —, martyr, II. 4.
 July, VI. 77—gardening calendar for, XI.
 759.
 JUMBASIER, town in Hindustan, XIII.
 19.
 JUMILLA, Spanish town, XIII. 19.
 JUMNA, river, XIII. 19; XI. 448, 450; X.
 400; XVII. 647.
 Jumper, for boring rocks, IV. 755.
 JUNAGUR, town in Hindustan, XIII. 19.
 Juncaceæ, nat. ord. of plants, V. 213.
 Juncaginaceæ, nat. ord. of plants, V. 214.
 June, gardening calendar for, XI. 759.
 Jung Bahadoor, XVI. 149, 314, 315.
 Jungermanniaceæ, sub-order of plants,
 V. 217.
 JUNGFRAU, Swiss mountain, XIII. 19;
 XXI. 504—height of, XVII. 642.
 Jungle cock, XVI. 789.
 JUNIEN (St), French town, XIII. 19.
 JUNIPER, XIII. 19; V. 209—oil of, XVI.
 496.
 JUNIUS (Franciscus), XIII. 19.
 —(Hadrian), on the invention of
 printing, XVIII. 524.
 —, Letters of, XIII. 20, 754; X. 285,
 286; XI. 59—in the public advertiser,
 XVI. 185.
 Junkerite, mineral, XV. 100.

JUN—JUS

- JUNKSEYLOH, island, XIII. 20.
 JUNO, Roman divinity, XIII. 20.
 —, planet, IV. 68; III. 808.
 Junot (Marshal), V. 603; X. 139, 148—
 anecdote of, XV. 783, *n.*—his invasion
 of Portugal, XVIII. 387—Spain, XXI.
 820, 821.
 JUPITER, Roman deity, XIII. 20—Phidias'
 statue of, XVII. 508.
 —Ammon, II. 718, 724—temple of,
 XVI. 397—Alexander the Great's visit
 to, XIII. 768.
 —stator, temple of, III. 474, 475.
 —, planet, IV. 69, 91—belts of, IV.
 69—inequalities of, III. 812; I. 815—
 variations in its orbit, IV. 107—periods
 of revolution, I. 816.
 —(satellites of), III. 800, 813; IV.
 70, 73, 75—discovery of four by Galileo,
 I. 607; III. 800—theory of their mo-
 tions, I. 785—Laplace's theory, 785,
 815—their disturbances by action on
 one another, IV. 108—Lagrange on,
 XIII. 152, 156—mode of finding the
 longitude by their eclipses, 688.
 Jupon, XI. 322.
 JURA, island, XIII. 20; XI. 278—whirl-
 pool of Coryvreckan, near, VII. 422.
 —, department of France, XIII. 20.
 —MOUNTAINS, XIII. 21; XX. 887;
 XXI. 531.
 Jurassic period, in geology, XV. 206—in
 Russia, XIX. 517—fishes of, XII. 348,
 349, 350, 352.
 JURIEU (Pierre) XIII. 21—his quarrel
 with Bayle, IV. 523.
 Jurin (Dr) his theory of capillary action,
 VI. 212.
 Jurine (Louis) his works on insects, IX.
 12—on the circulation of the blood in
 crustaceans, XV. 356.
 Jurisprudence, XIII. 274, 267—Bacon on,
 I. 36—Grotius on, 86—origin of the
 law of nature and the law of nations,
 89—opinions of different philosophers,
 90, and *n.*—good effects of the alliance
 between the law of nature and the law of
 nations, *ib.*—a third and distinct idea of,
 sanctioned by Adam Smith, 91—abstract
 code of laws unphilosophical, 93—rea-
 sons why the Roman law should be
 taken as a standard, *ib.*—Bentham's
 writings on, 394—and legislation, dif-
 ferent senses in which the words are
 used, XIII. 267—what belongs to it in
 common with moral philosophy, XV.
 537; I. 400—Norwegian, XVI. 330—
 medical, XIV. 422, 463. See Law,
 Medical Jurisprudence.
 JURY TRIAL, XIII. 22—trial of civil
 causes by, in Scotland, II. 127—in Eng-
 land, VIII. 787—in France, X. 282—
 application of the theory of probability
 to the decisions of juries, XVIII. 609—
 Smellie on, XX. 337.
 Jus mariti, XII. 53—jus naturale, XIII.
 265.
 JUSSIEU (A. Laurent de), XIII. 25—his
 classification of plants, V. 179.
 —(Bernard de), on the wax of flowers,
 IV. 572—on mesmerism, XX. 419, 420,
 421.
 Justice—circumstances which distinguish
 it from other virtues, I. 87—the rules
 of, not enumerated by ancient moralists,
ib.—origin of the sense of, 383—Aris-
 totle on, III. 562—duty of observing,
 XV. 567—one of the ends of govern-
 ment, X. 732—an attribute of God,
 XXI. 192. See Ethical Philosophy,
 Virtue.
 —CLERK of Scotland, XIII. 26.
 —, College of, VII. 114; VIII. 395.
 —, Courts of, in England, VIII. 785
 —France, X. 281.
 —General (the Lord), XIX. 810.
 —OF THE PEACE, XIII. 26; XVIII.
 191.
 JUSTICIAR, or Justice-General, XIII. 27;
 XIX. 810.
 Justiciary, Court of, in Scotland, XIX.
 810.
 Justification, in theology, XXI. 218.

JUS—KAM

- JUSTIN MARTYR, XIII. 27; IX. 491.
 Justina, II. 663, 664.
 JUSTINIAN I. (Flavius Anicius), XIII. 28;
 VII. 312, 313—aqueduct of, III. 335—
 his buildings in Jerusalem, XII. 734—
 Egypt under, VIII. 474—his code, VI.
 745; VII. 52; XVIII. 565—his treat-
 ment of Belisarius, IV. 627.
 —II. (Rhynchmetus), XIII. 28; VII.
 313.
 JUSTINUS, Latin historian, XIII. 29.
 —I., emperor of the East, XIII. 29;
 VII. 312.
 —II., emperor of the East, XIII. 29.
 Jute, or jute hemp, V. 185.
 JUTERBOCK, Prussian city, XIII. 30.
 Jutia, or Hutia, quadruped peculiar to
 Cuba, VII. 565.
 Jutland, VII. 746.
 JUVENALIS (Decimus Junius), satirist,
 XIII. 30—poetry of, XVIII. 105—Gif-
 ford's translation, X. 622—Dussaulx's
 French translation, VIII. 269.
 Juxon, Bishop, V. 412.

K

- K, letter of the alphabet, XIII. 31—in
 abbreviations, II. 19.
 Kaaba of Mecca, VI. 44; XIV. 378, 379.
 Kabbala. See Cabbala.
 Kabyles, African people, II. 219, 566.
 Kacho, VI. 49.
 Kady, oriental judge, III. 351.
 Kadyak, island, II. 465; XIII. 129.
 KAEMPFER (Engelbert), XIII. 31—on
 Japan, XII. 688, 689 *et seq.*—on the
 Japanese and Chinese gods, VII. 716,
 717.
 KAFFA, or Caffa, XIII. 31; IV. 744; VII.
 505.
 Kafir or Kaffre, XIII. 32. See Caffres.
 KAFIRISTAN, XIII. 37.
 Káfoor, king of Egypt, VIII. 477.
 KAFRARIA, XIII. 32.
 Kahlamba mountains, in Natal, XV. 802,
 803.
 Kahoolawe, island, XVIII. 270.
 Kaid on sheep, II. 349.
 Kaiechos, Egyptian king, VIII. 454.
 Kailas mountains, XI. 441.
 Kaimacam, VI. 60.
 Kain (M. le), his proposal for testing the
 merits of dramatic pieces, XXI. 172.
 Kainozoic epoch, in geology, XV. 195.
 KAIRA, in Hindustan, XIII. 37.
 KAIRWAN, in Tunis, XIII. 37.
 KAISARIYEH or Kaisariah, in Asia Minor,
 XIII. 37.
 Kaiserburg, palace, XXI. 583.
 KAISERSLAUTERN, XIII. 37.
 Kakodyle, VI. 513.
 Kakoxene, mineral, XV. 101.
 Kakundy, African river, XVI. 393.
 Kalabshee, temple of, XVI. 349.
 KALAMAIKA, Hungarian dance, XIII. 37.
 KALBE, Prussian town, XIII. 37.
 Kale, culture of, XI. 737—sea-kale, 742.
 KALEIDOSCOPE, XIII. 37; XVI. 556.
 KALEND, or Calends, XIII. 40; VI. 76.
 KALISZ, or Kalisch, Polish city, XIII. 40.
 Kali-yug, era of, VI. 676.
 KALLEENJUR, XIII. 40. See Callinger.
 Kalmar, in Sweden, VI. 104.
 Kalmucks, or Calmucs—skull of, III. 29.
 KALOCSA, Hungarian town, XIII. 40.
 Kaltenbach (J. H.), his work on insects,
 IX. 22.
 KALUGA, in Russia, XIII. 40; XIX. 521.
 Kaluschi, II. 680.
 KAMA, river, XIII. 40.
 Kames (Lord). See Home (Henry).
 Kamichi, bird, XVI. 807.
 KAMINETZ, town in Russian Poland,
 XIII. 40—government of, XIX. 521.
 Kamis, in Japanese mythology, VI. 121.
 Kamishin, Russian town, XIII. 40.
 Kammererite, mineral, XV. 80.
 Kampylite, mineral, XV. 106.
 KAMTSCHATKA, XIII. 40; XIX. 521—
 height of mountains, XVII. 643, 644.

KAM—KAR

- Kämtz, his isobarometric lines, XIV. 664
 —on meteorology, 649 *et seq.*
 KANAWHA, river, XIII. 41.
 KANDAHAR, XIII. 41. See Candahar.
 Kandake, VI. 168.
 Kandian country, VI. 396.
 KANDY, city in Ceylon, XIII. 41; VI. 391,
 398.
 Kane (Dr.), his northern voyage in 1853,
 XI. 40, 41; XVIII. 175—raised beach
 described by, XVII. 585—on the source
 of the Mary Minturn river, 576, *n.*—an
 extreme temperature recorded by, 613.
 —(Sir Robert), on the fall of rain in
 Ireland, XII. 504—on gold in Ireland,
 506—on the inland navigation of Lei-
 trim, XIII. 329.
 Kaneelstein, XV. 85.
 Kangaroo, XIV. 176; IV. 260; XXI. 31—
 teeth of, XVI. 483—homologies of the
 teeth of, 484—its organs of voice, III.
 101—stomach, 108—fossil, XVII. 174,
 175, 638.
 —rats, XIV. 176—dentition of,
 XVI. 449.
 —ISLAND, XIII. 41; IV. 293.
 Kangra Valley, in the Punjab, XVIII. 687.
 KANGRAH, fort in the Punjab, XIII. 41.
 KANO, town in Houssa, XIII. 41; XI.
 777; II. 229; XIX. 565.
 KANOGE, in Hindustan, XIII. 41.
 KANSAS, XIII. 41; XXI. 419—river, XIII.
 42; XV. 281.
 —Nebraska Act of the United States,
 XXI. 442.
 Kanstatt, mineral springs of, XXI. 938.
 KANSUH, in China, XIII. 43.
 KANT (Immanuel) XIII. 43; XI. 282—
 his critique of pure reason, and the
 idea he annexed to the title, I. 189—
 outline of the doctrines in that work,
 XIII. 46—Madame de Stael's notice of
 it, I. 190—apparent identity of his doc-
 trine with that of Cudworth, 43, *n.* 2,
 191, *n.* 1, 194, 195—on Hume's theory of
 causation, 193—his claims to originality
 ill founded, 194—on general ideas not
 derived from experience, 279—on time
 and space, 195, 280, 281—his argument
 for free will, 196—his principle called
practical reason, 197, 429—Reinhold on
 his doctrines, and the impression pro-
 duced by them, 198—Prevost on, 199—
 decline of his system, *ib.*—schools that
 have emanated from his, 200—its op-
 ponents, 201—evils resulting from his
 writings, 283—his definition of logic,
 XIII. 571 *n.*—his ethical system framed
 for the purpose of guarding certain
 principles not sufficiently clear or well
 founded, I. 428—the performance of
 duty regarded by him as the chief end
 of man, *ib.*—on our *a priori* principles
 of knowledge, XI. 282—his rejection of
 experience as a source of knowledge,
 284—on universal history, 544—his
 house and tomb, XIII. 129—his cate-
 gories or forms of thought, XIV. 586,
 and *n.*—his four forms of judgment,
 592, *n.* 2—on syllogisms, 593, *n.* 2
 —critical philosophy of, 606—on meta-
 physics, 616, *n.* 2 *et seq.*—on moral obli-
 gations, XV. 563—his practical rule of
 virtue, 564—his classification of duties,
 565—duty to God, 570—his definition
 of happiness, 572—goodness and hap-
 piness distinct, 574—on the character
 of rational psychology, XIV. 604, *n.* 3—
 on the antinomies of pure reason,
 618—his notion of beauty, 623, *n.* 9
 —his use of the word *reason*, XVIII.
 815—Jacobi on, XII. 668—on the moral
 proof of the existence of God, XXI. 187;
 on the proof from design, 188.
 KANTEMIR, XIII. 52; XIX. 547.
 KANTURK, town in Cork, XIII. 52.
 Kaolin, porcelain clay, XV. 83; VI. 393;
 XIII. 489; XVIII. 439.
 Kapnite, mineral, XV. 100.
 Kara, sea of, XIX. 516.
 Karachi, town in Oudh, XX. 305.
 Karaites, or Caraites, VI. 228; VII. 504,
 505.

KAR—KEB

KARAK, island, XIII. 52.
 Kara-kerman, IV. 742.
 Karakoram mountains, XI. 441.
 KARAMANIA, XIII. 52. See Caramania.
 KARAMSIN (N. Mikhaelovitch), historian, XIII. 52; XIX. 547.
 Karasubazar, in the Crimea, VII. 505.
 Karens, Indian race, XXI. 151, 152.
 KARICAL, town in Hindustan, XIII. 52.
 Karim Khan, XVII. 440, 441.
 Karlsbad. See Carlsbad.
 Karlstadt. See Carlsstadt.
 Karmatees, their invasion of Egypt, VIII. 477.
 Karmoot, fish, XII. 260.
 Karn (el), lake, VIII. 429, 503.
 KARNAK, XIII. 52; VIII. 507. See Carnac (Temple of).
 KARNATA, XIII. 52.
 Karnow, Austrian town, XII. 670.
 KARNTHEN, XIII. 52.
 Karpholite, mineral, XV. 73.
 Karphosiderite, mineral, XV. 101.
 Karrakorum, III. 753.
 KARS, town in Asiatic Turkey, XIII. 52—General Williams' defence of, 53; XIX. 511.
 Karslake's aids to the study of Logic, XIII. 577.
 Karstenite, mineral, XV. 96.
 Kárún, Persian river, XVII. 420.
 KASAN, XIII. 53; XIX. 521—university of, XIX. 532; XXI. 492.
 KASCHAU, Hungarian city, XIII. 54.
 Kashan, VI. 212, n.
 KASHGAR, or Cashgar, XIII. 54.
 Kashna, XI. 778.
 Kashrood, river, II. 202.
 Kaskaskia, in Illinois, XII. 362, 363.
 KASMARK, in Hungary, XIII. 54.
 KASSIMOW, Russian city, XVII. 54.
 KASTAMOUNI, town in Anatolia, XIII. 54.
 Kastor, mineral, XV. 72.
 Kat, river settlement, XIII. 34.
 Katagum, XI. 776, 777.
 Kater (Captain Henry), I. 852—his pendulum, 776, 852—his collimator, 852; VII. 127—his hygrometer, XII. 186—on the method of making artificial magnets, XIV. 77—on the needle, 78—his azimuth-compass, 79—his pendulum observations, IX. 573; XXI. 800, 801.
 Katharine (St) docks, London, XIII. 661.
 Kathetometer, XX. 560.
 KATRINE (Loch), XIII. 54; XVII. 456; XIX. 794—its temperature at different depths, VI. 777—water for the supply of Glasgow from, X. 649.
 Katsena, province of Houssa, XI. 776.
 KATTYWAR, in Hindustan, XIII. 54.
 Kauai, island, XVIII. 270.
 Kaung-hee, Chinese dictionary of, VI. 577, 578— anecdote of, VI. 595.
 Kaup (Dr), on fishes, XII. 230, 233 *et seq.*, 328—on the teeth of animals, XVI. 472, 483—on fossil cervidae, XVII. 170.
 Kauri, or Cowdee pine, XVII. 629; V. 209; XVI. 233—as timber, XXI. 275.
 KAVALA, Turkish town, XIII. 55.
 Kawara, African river, II. 214. See Niger.
 Kay (John) physician, XIV. 460. See Caius.
 Kaye (Dr), on the miracles of the early Christians, VI. 638.
 — (John), of Bury, his invention of the fly shuttle, VII. 441; XX. 508.
 KAYNS, Asiatic tribe, XIII. 55.
 KAZEROON, Persian town, XIII. 55.
 Kazinczy (Francis), XII. 19.
 Kea, lough, XIX. 420.
 KEAN (Edmund), tragedian, XIII. 55; XXI. 176.
 — (Charles), his management of Drury Lane Theatre, XXI. 174.
 Keane (Sir John), V. 667—Ghizni stormed by, X. 603.
 KEATS (John), XIII. 55—poetry of, XVIII. 127; Jeffrey's opinion of, XII. 717.
 Keays (Christopher), on the produce of the Irish salmon fisheries, IX. 624, 625.
 Kebbi, in Houssa, XI. 777.
 Kebles' Christian Year, XII. 189.

KEC—KEM

Kecho, VI. 49.
 KEDARNATH, in Hindustan, XIII. 57.
 Kedge anchor, III. 116.
 KEDGEREE, town in Bengal, XIII. 57.
 KEDJE, in Beloochistan, XIII. 57.
 Kedlestone Park, VII. 754.
 —, sulphurous spring at, VII. 755.
 Kedous, river, XI. 353.
 Kedron, river, XVII. 188. See Kidron.
 Keel, of ships, XX. 185—of iron ships, 194—launching on the, 205.
 Keel-birds, XVI. 779.
 KEELING, islands, XIII. 57.
 Keelson, XX. 194.
 Keelwa, in Zaquebar, XVIII. 735.
 Keene's marble cement, XX. 715.
 Keep of a castle, VI. 327.
 Keeyeff, Russian government, XIX. 521.
 Keezi, lake, XIX. 549.
 KEFIL, village of Irak Arabi, XIII. 57.
 KEHL, town in Baden, XIII. 57.
 KEIGHLEY, town in Yorkshire, XIII. 57—its worsted manufactures, XXI. 918, 958.
 Keightley (Thos.), on the date of Spenser's birth, XX. 505, n.
 Keilhauite, mineral, XV. 91.
 Keill (John), on Newton's claim to be regarded as the inventor of the calculus, IX. 672—his challenge to John Bernoulli, IX. 675.
 Keinton, battle of, V. 403.
 Keir (Sir William), his expedition against Rao Bharmuljee, VII. 599.
 Keir's hydrostatic lamp, XIII. 171.
 KEITH, town in Banffshire, XIII. 58.
 — (Bishop), his history of affairs in Scotland, XXI. 897.
 — (J. F. E.), field-marshal, XVIII. 651—game invented by, VI. 538.
 — (Dr), his photographic process, XVII. 549.
 Keith's siphon barometer, IV. 461.
 Kelaart's *Flora Calpensis*, X. 619.
 Kelanonesians, in ethnology, IX. 347.
 KELAT, city of Asia, XIII. 58, IV. 640, 641.
 — valley in Persia, XIII. 58.
 Kelch, his work on insects, IX. 23.
 Kelland (Prof.), on waves, I. 889; XII. 76—his theory of heat, I. 952.
 KELLERMANN (François-Christophe), Duke of Valmy, XIII. 58; V. 574; X. 70, 119, and n.
 Kellet (Capt.), X. 474; XVIII. 172.
 Kellgren, Swedish poet, XIX. 698.
 Kellia, genus of mollusks, XV. 350—fossil, XVII. 107.
 Kellie (Dr.), on the amount of fluids in the cranium, XVII. 698.
 Kells, Irish town, XIII. 59; XIV. 377.
 Kelly (Sir Fitzroy), on bribery, V. 342—on the reduction of the statute law, XIII. 273, n.
 — (William), his machinery for mule spinning, VII. 445.
 — (John), on the carboniferous rocks of Ireland, XV. 200.
 Kellystown, VI. 240.
 Kelp, XIII. 59—manufacture of, X. 661, 662; in Orkney, XVI. 721—Shetland XX. 114—Hebrides, XI. 279—iodine obtained from, VI. 469—its use in glass-making, X. 661.
 Kelpies, I. 464.
 KELSO, XIII. 59—burnt by the English in 1542, XI. 781.
 Kelts, spawned salmon, IX. 590, 616; XII. 239.
 — IX. 351. See Celts.
 Kelvin aqueduct, III. 338.
 KEMAON, in Hindustan, XIII. 59—height of mountains, XVII. 643—geology of, XI. 443.
 KEMBLE (John Philip), tragedian, XIII. 60, 55; XXI. 174, 176—his burial place, XIII. 250.
 — (T. M.), his contributions to philology, XVII. 528.
 Kemp (Edward), on architectural garden- ing, XVII. 774.
 Kempelen (M. de), his automaton chess- player, III. 138.

KEM—KER

Kempenfelt (Admiral), V. 501.
 KEMPIS (Thomas à), XIII. 61; XI. 590.
 KEMPTEN, town of Bavaria, XIII. 62.
 KEN (Thomas), bishop, XIII. 62.
 KENDAL, XIII. 62; XXI. 843—group of rocks, XV. 198.
 KENEH, in Upper Egypt, XIII. 62; VIII. 506.
 KENILWORTH, XIII. 62.
 KENMARE, Irish town, XIII. 63.
 — river, VII. 372; XIII. 73.
 KENMORE, in Perthshire, XIII. 63.
 Kennard (T. W.), his design for the Crumlin viaduct, XII. 597.
 Kennebec, river in Maine, XIV. 98.
 Kennedy (Col. Vans), on the origin of languages, II. 616—on the Celtic language, VI. 366.
 — (Mr), his discoveries in Australia, IV. 257.
 — (Walter), his "Flying" with Dunbar, VIII. 250.
 — (Bishop), XIX. 759, 760—St Sal- vator's College, St Andrews, founded by, XXI. 473.
 Kennel management, XI. 768; XII. 37.
 KENNET, river, XIII. 63.
 — (WHITE), bishop, XIII. 63—his account of Hobbes, XI. 551.
 Kenneth Macalpine, XIX. 744.
 — Scottish kings so named, XIX. 749.
 KENNICOTT (Benjamin), XIII. 63—on the Pentateuch, IV. 696—his edition of the Hebrew Bible, 697; XIX. 835.
 Kennington Park, XIII. 668.
 Kensington, XIII. 660—palace, 668; South Kensington museums, XXI. 324.
 KENT, XIII. 64—garden seeds grown in, II. 337—its hops, 333; V. 324—its orchards, II. 337—population and value of property, VIII. 754—disturbances there in 1830, V. 659—inheritor of land in, XVIII. 516—wool of, XXI. 911, 912—paper making in, XVII. 259.
 — (WILLIAM), landscape-gardener, XIII. 68.
 — in Rhode island, XIX. 147.
 Kentigern, III. 721; X. 645.
 Kentish rag, fossils of, XVII. 93—as a building stone, XX. 712.
 Kent's Grammar of Heraldry, XI. 839, n.
 KENTUCKY, XIII. 69; XXI. 419—debt of, 428—wines, 888.
 — Coffee tree, XVII. 763.
 Kenworthy and Bullough's power looms, XXI. 789.
 KENYON (Lloyd, Lord), XIII. 70.
 KEPLER (John), XIII. 71; I. 604—on the formation of a new star, 842—his tract on stereometry, 554—intro- duced the idea of infinitely great and infinitely small quantities in geometry, ib.—on circles, ib.—on inertia and motion, 606—was the first to analyse the structure of the eye, 625—his tele- scope, II. 87; XVI. 529—his astro- nomical discoveries, I. 579, 488 *et seq.*, III. 799—his problem to determine the sun's place in its orbit, IV. 19—transit of Mercury predicted by, I. 611—his three laws, 579; IV. 60; III. 799—on attraction, I. 674; IV. 220—on the cometary orbits, VII. 167—on the mensuration of round solids, IX. 670—on geometry, X. 505—on light, XIII. 449—his *Dioptrics*, I. 627—his obligations to Tycho Braahi, V. 266—on logarithms, XIII. 553—on ice crystals, VII. 103—on optics, XVI. 529—telescopes im- proved by, XXI. 118—on the tides, 250.
 Keppel (Admiral), V. 465, 484; VIII. 251—his engagement with the French fleet, V. 485—his dispute with Sir Hugh Pal- liser, 486—his trial and acquittal, 487—his resignation, ib.
 Kerasan. See Keresoon.
 Kerate, mineral, XV. 107.
 KERBELA, city in Asiatic Turkey, XIII. 71; XIV. 546.
 Kerckringius, anatomist, II. 763.
 KERESOON, Turkish port, VIII. 71.
 KERGUELEN LAND, XIII. 71; IV. 268—plants of, XVII. 629.

KER—KHO

Keris, genus of fishes, XII. 304.
 Kerka, river, VII. 627.
 KERKOOK, Turkish town, XIII. 71.
 KERMAN or Kirman, XIII. 71.
 KERMANSHAW, in Persia, XIII. 71.
 KERMES, insect, XIII. 71; IX. 172—its use in dyeing, VIII. 284—in Greece, XI. 16.— mineral, XV. 122.
 Kernell (T. E.) his work on insects, IX. 71.
 Kernels, or lymphatic glands, II. 805—of seeds, V. 140.
 Kerolite, mineral, XV. 84.
 Kerona, genus of animalcules, III. 203.
 KEROWLEE, town in Hindustan, XIII. 71.
 KERRY, Irish county, XIII. 72; XII. 515, 517—effects of the cottage system in, VII. 431.
 Kersanton rock, XV. 135.
 Kersseboom (William), on the rate of mor- tality in Holland, XV. 601, 631; XII. 398.
 KERTCH, in the Crimea, XIII. 75; IV. 744; VII. 504, 505.
 Kestrel bird, XVI. 745.
 KESWICK, XIII. 75—lake, VII. 578.
 KESZTHELY, Hungarian town, XIII. 75.
 Ketengus, genus of fishes, XII. 262.
 KETSKEMET, Hungarian, town, XIII. 75.
 Kettle-drums, VIII. 190; XV. 713.
 KETTERING, in Northamptonshire, XIII. 75.
 Ketton building stone, XX. 712.
 Ketupa, genus of birds, XVI. 746.
 Keuper, group of rocks, XV. 205; X. 584— fossil fishes of, XII. 348.
 Keverburg (Baron de) on Belgium, IV. 599, 600, 601.
 Kew, in Surrey, XIII. 75—gardens at, II. 430—Aiton's *Hortus Kewensis*, II. 431; VIII. 201.
 Kewley (Mr), his syphon for hot-houses, XI. 723.
 Kew-lung-kiang, river, VII. 48.
 Kexel (Olaf), Swedish dramatist, XIX. 699.
 Key. See Lock.
 Key, an apparatus in electric telegraphs, XXI. 99.
 KEY ISLAND, XIII. 75—in music, XV. 706—seed of trees, XVII. 768.
 KEY ISLANDS, XIII. 76, 79.
 Keys, house of, in the Isle of Man, XIV. 245.
 Key stone, III. 401 *et seq.* See Bridge.
 KEY-WEST, island, XIII. 76.
 KEYNSHAM, in Somersetshire, XIII. 76.
 Khadedsha, province of Houssa, XI. 776.
 KHAFALUN, town in Tibet, XIII. 76.
 Khairpur, town in Oudh, XX. 305.
 Khaled, III. 362.
 Khalif. See Caliph.
 KHALKAS, Mongolian race, XIII. 76; XV. 425.
 Khamzin wind, II. 216.
 Khan, title, VI. 408.
 KHANDESH, in Hindustan, XIII. 76—hail in, XIV. 659.
 KHANIA, in Candia, XIII. 76; VI. 172.
 Kharesmees, VIII. 482.
 Kharismians, their invasion of Palestine, XVII. 197.
 KHARKOV, in European Russia, XIII. 76; XIX. 521—university of, 491, 532; XXI. 492.
 KHARTOON or Khartum, XIII. 76; XVI. 268, 269; II. 224, 225; XX. 51.
 Khasyah mountains, XVII. 598.
 KHATMANDU, XIII. 76. See Catmandoo.
 Khazar, traditional Jewish kingdom, XII. 777.
 Khem, Egyptian deity, VIII. 436.
 KHERSON, XIII. 76; XIX. 521—coasts and ports of, IV. 742.
 Khio. See Scio.
 Khirgises, steppe of the, III. 732. See Kirghiz.
 KHIVA, XIII. 77; V. 759.
 Khor, Persian town, XIII. 77.
 KHOJEND, XIII. 77.
 KHOKAN, XIII. 77.
 KHOOLOOM, XIII. 77.
 KHORASAN, in Persia, XIII. 78—pastoral tribes of, XVII. 430.
 Khorsabad, ruins at, XVI. 274, 275.

KHO—KIL

KHOSRU, or Khosrew I., king of Persia, XIII. 78.
 Khumaraweyh, king of Egypt, VIII. 476.
 Khuns, Egyptian deity, VIII. 436.
 KHURD-CABUL, in Afghanistan, XIII. 78.
 Khursheed, Pascha, VIII. 491.
 Khusrau Parviz, king of Persia, XVII. 436.
 —Nushirvan, king of Persia, XVII. 435.
 Khusruf (Mohammed) Pasha, VIII. 489.
 KHUZISTAN, in Persia, XIII. 78.
 KHYRPOOR, town in Hindustan, XIII. 79.
 Ki, or Key islands, XIII. 79.
 KIACHI or Kiakhta, town of Siberia, XIII. 79—trade of, VI. 591; XIX. 551.
 Kiangning Fu. See Nanking.
 KIANGSEE, in China, XIII. 79.
 KIANG-SU, in China, XIII. 79.
 Kid, flesh of, IX. 762—kid-skin leather, XIII. 105.
 Kidd (John, M.D.) his Bridgewater treatise, V. 364.
 —(Mr), on the principles of reasoning, XIII. 577.
 KIDDERMINSTER, XIII. 79.
 —carpets, VI. 271; XXI. 918.
 KIDDERPORE, XIII. 79.
 Kidney-bean, culture of, XI. 733.
 Kidneys of man, III. 67—of brutes, 113—excretion from, XVII. 666—worms in, XXI. 974.
 Kidron, XII. 737 *et seq.*
 KIDWELLY, in Wales, XIII. 79; VI. 53.
 KIEFF, Kiev or Kiow, in European Russia, XIII. 79; XIX. 469 *et seq.*
 KIEL, Danish sea-port, XIII. 80—canal of, VII. 748.
 Kielsenn (F. C.), his work on insects, IX. 17.
 Kiener (L. C.) his work on the mollusca, XV. 327.
 Kieser (Dr) of Jena, his system of tellurism, XX. 445.
 Kiesewetter, instance of fanaticism related by, IX. 481.
 Kiffin (William), XVII. 392.
 KIL, XIII. 80.
 Kilbagie distillery, VI. 750.
 KILBARCHAN, in Renfrewshire, XIII. 80.
 KILBIRNIE, in Ayrshire, XIII. 80.
 Kilbrickenite, mineral, XV. 119.
 Kilchurn Castle, ruins of, IV. 330.
 KILCREGGAN, XIII. 80.
 KILDA (St), Island, XIII. 80.
 KILDARE, Irish county, XIII. 80; agricultural statistics of, XII. 515, 517.
 —Earl of, XII. 474.
 Kildin, island, XIII. 242.
 Kildrummy, castle of, II. 33.
 Kilhamites, methodists, XIV. 694.
 Kilias, mouth of the Danube, VII. 654; VI. 742.
 KILIMANDJARO, African mountain, XIII. 84; II. 211; X. 477; XVII. 600, 644.
 Kilimane, XV. 669.
 KILKENNY, Irish county, XIII. 84—coal, VII. 118—agricultural statistics of, XII. 515, 517—statute of, 471.
 —CITY, XIII. 87—taken by Cromwell, XII. 484.
 KILLALA, Irish town, XIII. 87; XIV. 370, 371.
 KILLALOE, in Clare, XIII. 87; VI. 754.
 KILLARNEY, in Ireland, XIII. 88, 72, 75—lakes of, XII. 505; XIII. 73, 88; salmon in, IX. 620.
 Killas, or clay-slate, XV. 245.
 Killierankie, IV. 751—battle of, V. 441.
 Killinite, mineral, XV. 72.
 KILMALLOCK, Irish town, XIII. 88, 489—battle of, XII. 477.
 KILMARNOCK, in Ayrshire, XIII. 88—woollen manufacturers of, IV. 333—railways to, ib.
 Kiln, XVIII. 80—maltster's, V. 323—brick-maker's, V. 345—glass-maker's, X. 664.
 KILOGRAMME, Kilolitre, and Kilometre, XIII. 88; X. 284.
 Kilpatrick hills, XIX. 791.
 KILRENNY, in Fife, XIII. 88.
 KILRUSH, Irish town, XIII. 88; VI. 754, 755.
 Kilsby tunnel, XVIII. 760; XX. 683.

KIL—KIN

KILSYTH, XIII. 88—battle of, V. 407—coal and copper at, XX. 702.
 Kilwarden (Lord), V. 624.
 KILWINNING, town in Ayrshire, XIII. 88—mason lodge, XIV. 337.
 KIMBOLTON, in Huntingdonshire, XIII. 88.
 KIMCHI (David), rabbi, XIII. 88.
 Kimmeridge clay, XV. 208.
 KINBURN, Russian fortress, XIII. 89; IV. 743; XIX. 510.
 Kincaid (Sir John), on the effects of separate confinement in prisons, XVIII. 582.
 KINCARDINE, in Perthshire, XIII. 89.
 KINCARDINESHIRE, XIII. 89—agricultural statistics, XIX. 796, 797, 798—population, 799.
 Kinchinjunga, one of the Himalayas, XI. 438, 441; XVII. 598, 643—its geological composition, 441.
 Kindred, VII. 296.
 Kinè, in Egypt, VIII. 506.
 King, doctrine of the divine right of, V. 718—coining, a prerogative of, VII. 73—his precedence in the British legislature, VIII. 766—list of kings who have abdicated, II. 24. See Monarchy.
 —George's war in the United States, XXI. 434.
 —(WILLIAM, D.D.), XIII. 90—his work on the origin of evil, I. 170.
 —(Dr), principal of St. Mary's Hall, Oxford, XXI. 734.
 —(Capt.), governor of Australia, IV. 271—on the specific gravity of sea-water, XVII. 573.
 —(Gregory), on human mortality, XV. 601.
 —(Sir J. Dashwood), his improved breed of harriers, XI. 771.
 —(Dr), on fossil foot-prints of reptiles, XVII. 132.
 King-bird, XVI. 749.
 Kingdoms in Europe, IX. 397.
 King-fishers, XVI. 772. See Alcedo.
 KINGHORN, in Fifeshire, XIII. 93—ferry, IX. 769.
 Kingly office of Christ, XXI. 215.
 Kingo (Thomas), Danish poet, XIX. 692.
 King-post, in carpentry, XIX. 383.
 Kings-of-arms, XI. 319.
 King's Advocate, or Lord Advocate, II. 158.
 KING'S BENCH (Court of), XIII. 90; VIII. 785, 788.
 KINGS, BOOKS OF THE, XIII. 90.
 Kingsborough (Lord), his work on the antiquities of Mexico, III. 502, *n.*
 KINGSBRIDGE, in Devon, XIII. 93.
 King's College, London, XXI. 470.
 —Aberdeen, XXI. 478.
 KING'S COUNTY, XIII. 90—agricultural statistics of, XII. 515, 517.
 King's Cross railway station, XVIII. 773; Plate.
 King's Evil. See Scrofula.
 Kingsley (Rev. C.), on the cure of stammering, XX. 534.
 Kingsmill, group of islands, XVIII. 270.
 King's Sedgmoor, measurement of a trigonometrical base on, XXI. 331.
 KINGSTON, in Jamaica, XIII. 93; XII. 680.
 —in Canada, XIII. 93; VI. 144.
 —upon-Hull, XI. 794.
 —UPON-THAMES, XIII. 93.
 —(John), on the strength of copper bolts, XX. 174.
 KINGSTOWN, in county of Dublin, XIII. 94; VIII. 214.
 Kinic acid, VI. 515.
 Kinkajou, in zoology, XIV. 155.
 KINNAIRD'S HEAD, XIII. 94.
 Kinnersley on electricity, VIII. 529—his electrical air thermometer, 626.
 Kinniburgh (Robert), VII. 686.
 Kinnoull Hill, XVII. 450, 457.
 Kino, V. 190.
 KINROSS, XIII. 94.
 KINROSS-SHIRE, XIII. 94—agricultural statistics, XIX. 796, 797, 798—population, 799—Ordnance survey, XXI. 333.

KIN—KIT

KINSALE, Irish town, XIII. 95—harbour, VII. 371—taken by William III. 490.
 KINTORE, in Aberdeenshire, XIII. 95; II. 34.
 KINTYRE or Cantyre, XIII. 95; VI. 202.
 Kiöge, town in Denmark, XIII. 95.
 KJÖLEN, or Kjölen mountains, XIII. 95; XVI. 320.
 KIONG-TCHOU, XIII. 96.
 Kippers, IX. 616.
 KIPPIS (Andrew, D.D.), XIII. 96—his edition of Lardner's works, 245.
 Kirauea, volcano, XVIII. 270, 271.
 Kirb-roof, XIX. 381, 383.
 KIRBY (William), XIII. 96—his works on insects, IX. 11—his Bridgewater treatise, V. 364—his co-operation with Mr Spence, XX. 504—on the entozoa, XXI. 977—on the echini, 988, 990, 993.
 —and Spence, their introduction to entomology, IX. 11; XIII. 96—on the number seven, III. 191—on the orders of the arachnides, 370—their defence of entomology from the charge of cruelty, 177—on the insensibility of insects to pain, ib.—on the webs of spiders, 375—on Lamarck's views regarding the development of animals, 189, *n.*—on the *arana aquatica*, 380—on the maxillæ of insects, IX. 32—on the metamorphosis of insects, 54—insect seasons, 73.
 Kirchbaumer, his work on insects, IX. 23.
 KIRCHEIM, in Würtemberg, XIII. 97.
 KIRCHER (Athanasius), XIII. 97—on Archimedes's burning glasses, VI. 4, 5—on animal magnetism, XX. 415—on the speaking trumpet, XXI. 360.
 KIRGHIZ, Steppe of the, XIII. 98; III. 732.
 Kirkaldy (David), his experiments on the strength of iron and steel, XX. 779.
 KIRKBY, XIII. 101.
 —Kendal, XIII. 62.
 —LONSDALE, XIII. 101.
 —Stephen, XXI. 843.
 —Thore, XXI. 843.
 KIRKCALDY, XIII. 97.
 —of Grange, XIX. 781, 787.
 KIRKCUDBRIGHTSHIRE, XIII. 98—town, 100, 101—agricultural statistics, XIX. 796, 797, 798—population, 799—Ordnance survey of, XXI. 332, 333.
 Kirke (Colonel), V. 435.
 Kirk-of-Field, XIX. 785—Edinburgh College built on, XXI. 481.
 Kirkdale cave, fossil bones in, XVII. 639.
 KIRKHAM, XIII. 101.
 KIRKINTILLOCH, XIII. 101; VIII. 235.
 KIRK-KLISIE, in European Turkey, XIII. 101.
 KIRKOSWALD, in Ayrshire, XIII. 101.
 Kirkpatrick (Col.), on Nepaul, XVI. 142, 143 *et seq.*
 Kirk-session, XVIII. 493.
 KIRKWALL, in Orkney, XIII. 102.
 KIRRIEMUIR, in Forfarshire, XIII. 102.
 Kirsch-wasser, XXI. 672.
 KIRWAN (Richard), XIII. 102—his chemical views and experiments, VI. 352, 353—his method of calculating the point of perpetual congelation, 772.
 Kirwanite, mineral, XV. 73.
 KISCHINEFF or Kischenaw, in Russia, XIII. 102.
 KISFALUDY, two Hungarian poets, XIII. 102; XII. 19, 20.
 KISHENAGUR, in Hindustan, XIII. 132.
 KISHM, island, XIII. 102.
 Kishon, river, XVII. 188.
 Kishorn (loch), XIV. 795.
 KISHTEWAR, in Hindustan, XIII. 102.
 KISSINGEN, in Bavaria, XIII. 103.
 Kistic language, XIII. 216.
 KISTNAH, river, XIII. 103; XI. 450; XVII. 647.
 KIT-CAT-CLUB, XIII. 103; XXI. 519.
 Kitchen-garden, XI. 697, 737—calendar, 758.
 Kites, birds, XVI. 743, 744.
 —electrical, VIII. 527, 608.
 KITTO (John), XIII. 103.

KIT—KNI

Kitts' (St). See Christophers' (St).
 Kitunaha language, XIII. 220.
 KITZINGEN, in Bavaria, XIII. 104.
 KIU-SIU, XIII. 104; XII. 688.
 KIZILERMAK, river, XIII. 104; XI. 197.
 KIZLIER, Russian town, XIII. 104.
 Kladova, X. 641; VII. 653.
 KLAGENFURT, Austrian town, XIII. 104.
 KLAPROTH (Julius Heinrich von), orientalist, XIII. 104; XVII. 533, 535.
 —(MARTIN HEINRICH), XIII. 106—on the chemical properties of the water of the Dead Sea, III. 761.
 KLARENZA, in the Morea, XIII. 106.
 KLAUSENBURG, Austrian town, XIII. 106.
 KLAUSTHAL, in Hanover, XIII. 106; XI. 211.
 Klüber (General), V. 568, 574; X. 119—his conduct in Egypt, VIII. 489—assassinated, ib.; X. 119.
 Kleinarts (Nicholas), VI. 762.
 Kleist (Edward C.), his tales, XIX. 293.
 Kleptomania, XIV. 532.
 Klincock (Dr), on the electrophorus, VIII. 607.
 Klingert's diving apparatus, VIII. 57, 58.
 Klinoclase, mineral, XV. 103.
 KLOPSTOCK (Friedrich Gottlieb), XIII. 107; XIX. 717, 718—poetry of, XVIII. 119.
 Klotzch on the potato disease, V. 172.
 Klug (Francis, M.D.), his works on insects, IX. 13.
 Kluge (Prof.), his work on animal magnetism, XX. 425, 443.
 Knapp, on the heating powers of fuel, XII. 543.
 KNARESBOROUGH, town in Yorkshire, XIII. 107; XXI. 959.
 Knebellite, mineral, XV. 89.
 Knee, diseases of, in domestic animals, XXI. 559.
 Knee-pan, III. 35.
 Knees, in ship-building, XX. 186.
 KNELLER (Sir Godfrey), XIII. 107—his portraits, III. 714.
 Kneph, Egyptian deity, VIII. 435—temple of, 503.
 Knife, VII. 600, 601. See Cutlery.
 Knife-grinders, diseases of, XIV. 442.
 KNIGHT (Richard Payne), XIII. 107—on the Greek alphabet, II. 612—his theory of beauty, IV. 540, 550—on the beauty of certain pictures, 552.
 —(Charles), his chronological table of Shakespeare's plays, XX. 90.
 —(James), expedition of discovery under, XVIII. 169.
 —(T. A.), on the swarming of bees, IV. 581—his idea that plants can be permanently continued only from seed, V. 168; XI. 702—on the contraction of wood, XII. 816—on the propagation of plants, XI. 694, 695—his portable furnace, X. 357—his theory of acclimation, XI. 702—on horticulture, 703, 708, 711, 719—on the physiology of trees, XXI. 267—on the sap of trees, 268.
 —(Dr Gowin), his method of making artificial magnets, XIV. 68—his paste magnets, 73—his magnet, XXI. 646.
 —(Mrs), actress, XXI. 174.
 —Banneret, VI. 621—knight bachelor, 620.
 Knight-errantry, origin of, VII. 536.
 KNIGHTHOOD, XIII. 108—how conferred, VI. 615—arms and privileges of, 616—different orders of, 619—degradation from, 623; VII. 699—rise of the various orders of, XVII. 196—Portuguese orders of, XVIII. 395—Russian, XIX. 524. See Chivalry, Knights.
 KNIGHTON, town in Radnorshire, XIII. 108.
 KNIGHTS AND KNIGHTHOOD, XIII. 108.
 —of the Bath, IV. 498; XI. 340.
 —of the Garter, X. 407; XI. 340—of Malta, XIV. 114—Teutonic knights, XVIII. 648—of the Thistle, XXI. 228. See Knighthood.
 Knittel, his publication of Ulphilas' translation of the Epistle to the Romans, XVII. 209.

KNO—KOL

- Knock (J. W.), his work on insects, IX. 10.
 Knockmahon, Copper-mine of, XXI. 769.
 Knockmealdown mountains, XXI. 285, 768.
 KNOLLES (Richard), XIII. 123.
 Knorring (Baroness), Swedish novelist, XIX. 702.
 Knot, on a log-line, XIII. 551; XVI. 11—bend knot, XIX. 90.
 Knot bird, XVI. 804.
 Knotwort, order of plants, V. 193.
 Knout, or knoot, use of abolished in Russia, XIX. 525.
 Knowledge, division of the objects of, by Bacon, D'Alembert, and Locke, I. 1, 3, 8—causes which combined to accelerate its progress after the revival of letters, 16, 19—its diffusion has improved the science of government, 24—its progress favoured by the Crusades, VII. 533—what is implied in, I. 477—two kinds of, yielded by consciousness, XIX. 111—Plato's views on, XVII. 804—of God, sources of, XXI. 185.
 Knowles (Admiral), his quarrel with Smollet, XX. 362.
 — (Sir Robert), VI. 618; XIII. 113.
 — (Mr.), on fastenings in ship-building, XVI. 97—on ships in ordinary, 99—on preserving timber, 99—on the larch plantations of the Duke of Atholl, XXI. 275, 276.
 Knox (John), XIII. 133; XIX. 778 *et seq.*
 —Dr M'Crie's life of, XIII. 758—his liturgy, XII. 516—birthplace, XI. 176, 178—established the doctrine of predestination in Scotland, XVIII. 479.
 — (Dr) on the herring, XII. 235—on a species of whale, XIV. 236—on the ova of echinoderms, XXI. 994.
 — (Mr.), of Belfast, on the colours of double plates, VI. 647; XVI. 621.
 Knoxville, in Tennessee, XXI. 156.
 KNUTSFORD, town in Cheshire, XIII. 129.
 Koala, marsupial animal, XIV. 177—dentition of, XVI. 449.
 Kobaltbeschlag, mineral, XV. 104.
 Kobell (von), his scale of fusibility in minerals, XV. 63.
 Kobellite, mineral, XV. 120.
 Koch (C. L.), his work on insects, IX. 24.
 — (Gabriel), his work on insects, IX. 24.
 Kochanowski (John and Peter), Polish poets, XVIII. 159.
 Kochlin (J.), his work on insects, IX. 15.
 Kock (Paul de), his novels, XIX. 289.
 KODIAK, island, XIII. 129. See Kadyak.
 Kœchlin's turbine wheel, XII. 171.
 Koelin mountains, XIII. 234. See Kiölin.
 Koelreuteria paniculata, XVII. 762.
 Kœning on bees' cells, IV. 578.
 Koepstein (Wolfgang Fabricius). See Capito.
 Koerner (Theodore), his poetry, XVIII. 119.
 Koh. See Hindu Coosh.
 Kohat, in the Punjab, XVIII. 687.
 Koh-i-noor, diamond, VIII. 3, 4.
 Kohl-Rabi, culture of, II. 321; XI. 737.
 Kohl's description of a Russian bath, IV. 506.
 Kokum, or Cokum oil, XVI. 496.
 Kola, in Russian Lapland, XIII. 242, 243—destroyed by an English squadron, XIX. 507.
 Kolenati (F. A.), his work on insects, IX. 22.
 Kollin, battle of, XVIII. 653.
 Kolinski sable, X. 348.
 Kolk (Vander), on morbid growths, XVII. 695.
 Kollar (Vincent), his works on insects, IX. 17.
 — (G. G.), his work on insects, IX. 18.
 Kölle (Mr.), on the African languages, XIII. 227.
 Kölliker (Dr A.), his work on microscopical anatomy, II. 770—on the cylinder axis, 810—on the nerves, 812—on muscular filament, 821—on the cuttle-fish, XV. 402.
 Kollyrite, mineral, XV. 84.
 Kolobeng, in Africa, II. 211.

KOL—KRA

- KOLOMNA, Russian town, XIII. 129.
 Kolonglis, people in Algeria, II. 566.
 Kolpoda, genus of animalcules, III. 201.
 Kölreuter on the pollen of flowers, V. 154.
 Koluri. See Salamis.
 Kolush language, XIII. 220.
 KOMORN, Hungarian city, XIII. 129.
 KONGSBERG, town in Norway, XIII. 129—silver mines of, XV. 236; XVI. 322; VI. 778.
 KONIAH, city in Asia Minor, XIII. 129; XII. 356.
 KÖNIGGRATZ, town in Bohemia, XIII. 129.
 KÖNIGSBERG, in Prussia, XIII. 129—observatory of, III. 819—university of, XVIII. 648, 673; XXI. 492—climate, XVIII. 662—railway, 670.
 Konigsmarck (Count), siege of Athens by, IV. 173.
 Konig's printing-machine, XVIII. 558.
 KÖNIGSTEIN, in Saxony, XIII. 130; XIX. 684.
 Koninekia, fossil mollusks, XVII. 104.
 Könlite, mineral, XV. 125.
 Kookies, XI. 467.
 Koom, Persian town, XIII. 130.
 KOONDÖÖZ, in Turkistan, XIII. 130.
 Koordistan, XIII. 135.
 Koorsk, in Russia, XIX. 521.
 Koosum, oil, XVI. 495.
 Kootais, in Russia, XIX. 521.
 KORAES (Diamantes), XIII. 130.
 Korah, sons of, XVIII. 679.
 — in Hindustan, VII. 363.
 Koran, XV. 302—Maracci's edition of, XIV. 314; XV. 303—Sales', II. 456; XV. 303—character of, I. 491. See Aleoran.
 KORDOFAN, in Africa, XIII. 131; II. 225.
 Koreish, Arab tribe, III. 348, 351—Koran written in the dialect of, II. 454.
 Koriaks, XIII. 41—language, 217.
 KÖRNER (Theodor), XIII. 131.
 Koron, in Messenia, VII. 410.
 KOROTSCHA, Russian town, XIII. 131.
 Korusko, desert of, XVI. 268.
 KOSCIUSCO (Thaddeus), XIII. 131; V. 543; XVIII. 151; XIX. 487.
 KÖSFELD, Prussian town, XIII. 132.
 KÖSLIN, Prussian town, XIII. 132.
 Kosloff. See Kozloos.
 Kossacks. See Cossacks.
 Kossuth (Louis), provisional governor of Hungary, IV. 308; XII. 25—as a journalist, 20, 23—his proposal to dethrone the Hapsburg dynasty, 24—finds refuge in Turkey, XXI. 374.
 Kostendje, XIII. 137.
 KOSTER (Laurenz), XIII. 132; IV. 706, 707; XVIII. 524.
 KOSTROMA, in European Russia, XIII. 132; XIX. 521.
 KÖSZEGH, Hungarian town, XIII. 133.
 KOTA, in Hindustan, XIII. 133—sepoys' insurrection at, XVI. 311.
 KÖTHEN, German town, XIII. 133.
 Kothrol, island, XVII. 568.
 Koties, Indian tribe, XI. 467.
 Kötigite, mineral, XV. 104.
 Kotline, island, VII. 517; XIX. 552.
 KOTTEBUS, Prussian town, XIII. 133.
 KOTZEBUE (A. F. Ferdinand von), XIII. 133; VIII. 167, 168—the Emperor Paul's challenge translated by, XIX. 489.
 — (Lieut.) his voyage of discovery, XVIII. 170—his visit to Guahan, 269.
 Kouban, IV. 745.
 Kouenlun mountains, XI. 436 *n. 2 et seq.*; XVII. 598.
 KOULI-KHAN, XIII. 134. See Nadir Shah.
 Koupholite, mineral, XV. 73.
 Kourland, or Courland, Russian province, XIII. 134; XIX. 521.
 Koursk, in European Russia, XIII. 134.
 Kouyunjik, ruins at, XVI. 273, 274, 275.
 Kovno, Russian province, XIX. 521.
 Kowala, genus of fishes, XII. 237.
 Kow-bird, XVI. 778.
 Kozloos, or Kozlov, XIII. 135; IV. 743; VII. 505. See Eupatoria.
 Kozzacks. See Cossacks.
 Krablite, mineral, XV. 70.
 Kraft (Prof.), his experiments on the

KRA—KYA

- reflection of cold, VII. 100—on the Baltic, IV. 403—on magnetism, XIV. 7—on mortality at Petersburg, XV. 605.
 Krafsto, island. See Saghalien.
 KRAIN, or Carniola, XIII. 135; IV. 311.
 Kramericaceæ, nat. ord. of plants, V. 183.
 KRANTZ (Albert), XIII. 135.
 Krapacks. See Carpathian mountains.
 KRASNOE, XIII. 135; X. 159.
 KRASNOE-SELO, XIII. 135.
 KRASNOE-YARSK, in Siberia, XIII. 135.
 Kratzenstein on evaporation, IX. 407—on fogs, XIV. 654.
 Krause, his handbook of anatomy, II. 769—on the dimensions of the organs of the human body, III. 3.
 Kray (General), X. 117.
 Kreative, IX. 757.
 Kreil (Dr), on the moon's influence on the magnetic needle, XIV. 19.
 Kreitonite, mineral, XV. 87.
 KREMENTSCHUK, Russian town, XIII. 135.
 Kremlin, XV. 654.
 KREMNIETZ, town in Hungary, XIII. 135.
 KREMS, in Lower Austria, XIII. 135.
 Krenitzin (Capt.), voyage of, II. 464.
 KREUTH, in Bavaria, XIII. 135.
 KREUZNACH, Prussian town, XIII. 135—springs rich in bromides, VI. 469.
 Kris, eastern dagger, XII. 706; XX. 805.
 Krishnah, XIII. 103.
 Krohnus, genus of fishes, XII. 304.
 Krokot, mineral, XV. 106.
 Krokydolit, mineral, XV. 82.
 KRONSTADT, XIII. 135; VII. 517.
 KROTOSZYN, Prussian town, XIII. 135.
 Krout (sour), IX. 760.
 KRUMHORN, musical instrument, XIII. 135.
 Krunitz on cookery, VIII. 26.
 Kruse, novels of, XIX. 293.
 Krusenstern's voyage, II. 465; XIX. 491.
 Kuang-si, in China, XVIII. 724.
 Kuang-tung, in China, XVIII. 724.
 KUBAN or Kuba, river, XIII. 135; VI. 340, 341; XIX. 515.
 — coast of the, IV. 745.
 Kublai-khan, VI. 561.
 Kugellan (J. G.), his work on insects, IX. 8.
 Kuhl on parrots, XVI. 733.
 Kühn's edition of Greek medical writers, XX. 813, *n. 2*.
 Kuka, African town, X. 478.
 KULM, village in Bohemia, XIII. 135—Vendamme defeated at, X. 163.
 Kumaon, XIII. 59. See Kemaon.
 Kumbur, IV. 639.
 Kunersdorf, battle of, XVIII. 654.
 Kunste (G.), his work on insects, IX. 12.
 Kupferindig, mineral, XV. 118.
 Kupffer on magnetism, XIV. 12, 18, 23, 37, 38, 55—his isogeothermal lines, 664, 672—on the climate of Russia, XIX. 519.
 KUR, river, XIII. 135; XXI. 92.
 KURDISTAN, XIII. 135.
 Kurds, XIII. 136; III. 779; XXI. 378—their language, XIII. 208.
 Kur-Hessen, or Hesse-Cassel, XI. 362.
 KURILE ISLANDS, XIII. 136; XIX. 552.
 KURNUL, in Hindustan, XIII. 136.
 KURRACHEE, in Hindustan, XIII. 136—pearl fishery of, XVII. 357.
 Kurrunj oil, XVI. 496.
 Kurtus, genus of fishes, XII. 298.
 KUSSIER, Turkish musical instrument, XIII. 137.
 KUSTENDJI, in European Turkey, XIII. 137.
 KÜSTER (Ludolf), XIII. 137—his edition of Suidas, XX. 801.
 — (H. C.), his work on insects, IX. 23.
 KÜSTRIN, Prussian town, XIII. 137.
 KUTAHIAH, Turkish town, XIII. 137.
 Kutais, XIX. 551.
 KUTTENBERG, in Bohemia, XIII. 137.
 Kutusof (General), X. 138, 156 *et seq.*
 KUYF (Albert), landscape painter, XIII. 137; XVII. 75.
 Kwora, river. See Niger.
 Kyan (J. H.), his method of preserving

KYA—LAC

- wood, V. 173; XX. 167; XXI. 279—ropes, XIX. 412.
 Kyanite, mineral, electricity of, VIII. 538.
 Kyle, district, IV. 332.
 Kyloes, west highland cattle, II. 342.
 Kyrosite, XV. 115.
- L**
- L, letter of the alphabet, XIII. 138—in abbreviations, II. 19.
 LAALAND, island, XIII. 138; VII. 746.
 Laason bridge, in lower Silesia, XII. 579.
 LABADIE (Jean), XIII. 138—Labadists, *ib.*
 LABARUM, Roman standard, XIII. 138.
 Label, in architecture, III. 510—in heraldry, XI. 326.
 LABEO (C. Antistius), Roman lawyer, XIII. 138.
 —, genus of fishes, XII. 257.
 Labeobarbus, genus of fishes, XII. 257.
 LABERIUS (Decimus), Roman knight, XIII. 138.
 Labiatae, nat. order of plants, V. 202—region of, 227; XVII. 627.
 Labiate corolla, V. 124.
 Labiatiflorae, nat. order of plants, V. 197.
 Labidus, genus of insects, IX. 194.
 Labillardière (Monsieur), on the natives of New Caledonia, IV. 266.
 LA BORDE (Jean Benjamin de), XIII. 139.
 Labour, Coulomb on daily, VII. 464—proper duration of daily labour for men and animals, XIV. 417—wages of, VII. 376, *n.*; difference of, in Manchester and Glasgow, XIV. 253—the only source of wealth, XVIII. 224—means of increasing its productive power, 227—combinations to raise the price of, VII. 162—natural price of, XXI. 47. See Wages.
 — (division of), VI. 316; VII. 429; XIV. 274; XVIII. 228—its effects on mental character, III. 707—its advantages, VII. 195—its disadvantages, 457—limited in agriculture; admits of greatest extension in manufactures, 192.
 —, in prison discipline, XVIII. 572, 573.
 Labourers and their employers, laws relating to, XIV. 346—number of farm labourers in England, VIII. 725—agricultural labourers, health of, XIV. 442—taxes on the articles consumed by labourers, XXI. 40—improved condition of, 678—wages of, 679.
 Labphak, ruins of, II. 697.
 LABRADOR, XIII. 139.
 —, felspar, XIII. 140—rock, XV. 135. See Labradorite.
 Labradorite, mineral, XV. 71.
 Labram (J. D.), his work on insects, IX. 20.
 Labrax, genus of fishes, XII. 275—fossil, 343.
 Labroides, family of fossil fishes, XII. 346.
 Labrus, genus of fishes, XII. 266—fossil, 346—section of a tooth of, XVI. 411—pharyngeal bone and teeth, 421.
 LA BRUYERE, XIII. 141. See Bruyère.
 LABUAN, Bornese island, XIII. 141; V. 49, 50.
 Laburnum, XVII. 759, 762.
 LABYRINTH, XIII. 141—Egyptian, III. 437; VIII. 503—of Cnossus, VII. 41—tomb of Porsenna, *ib.*—of the ear, III. 46; XVII. 679.
 Labyrinthibranchiæ, family of fishes, XII. 289.
 Labyrinthodon, fossil reptile, XVII. 137, 138; XXI. 738—teeth of, XVI. 412, 431; XVII. 137.
 Labyrinthodontia, fossil reptiles, XVII. 136.
 LAC, XIII. 141, 147; IX. 173; VIII. 285, 290—its use in electrical experiments, 540—lac-varnishing, XII. 699; XXI. 526—in Siam, XX. 233—in making sealing wax, XXI. 779.

LAC—LAF

- LA CAILLE, XIII. 141. See Caille.
 LACCADIVES, islands, XIII. 141; XVII. 583.
 LACE, XIII. 142—weaving of, XXI. 780—gold and silver, XIII. 145—manufacture of, VII. 451—at Tiverton, 764—of England, VIII. 732—Ireland, XII. 521—Brussels, V. 700—Mechlin, XIV. 418—Neuchâtel, XVI. 153—Nottingham, 338.
 Lace-bark-tree, V. 205.
 LACEDÆMON, XIII. 145, 147. See Sparta.
 LACEPEDE (B. G. Etienne, Comte de), XIII. 145—on reptiles, XIX. 16, n. 2; 32—on the frog, 75—on the pike, XII. 254.
 Lacerta, genus of reptiles, XIX. 28.
 Lacertia, reptiles, teeth of, XVI. 433.
 Lacertilia, fossil reptiles, XVII. 153—geological distribution of, 154.
 Lacertinidae, family of reptiles, XIX. 27.
 LACHESIS, XIII. 146; XVII. 272.
 Lachlan, river, XV. 697.
 LACHMANN (Karl), XIII. 146; XVII. 526—his edition of the New Testament, XIX. 837—on Homer, XI. 600, 601.
 Lachnolaimus, genus of fishes, XII. 267.
 Lachryma Christi, wine, XXI. 159, 889.
 Lachrymal bone, III. 22—orifices, 45—gland, 45—in brutes, 97.
 LACHRYMATORY, XIII. 147.
 Lacistemaceæ, natural order of plants, V. 207.
 LACKER or Lacquer, XIII. 147; XXI. 526—of Japan, XII. 694—lacquering furniture, X. 356.
 LA CONDAMINE, XIII. 147. See Condamine.
 LACONIA, XIII. 147; XI. 13; XX. 499 *et seq.*
 LACONICISM, XIII. 148.
 Lacordaire (J. T.), his work on insects, IX. 18.
 Lacquer. See Lacker.
 Lacroix's differential calculus introduced at Cambridge, I. 807—on Euler, V. 38.
 LACTANTIUS (L. C. Firmianus), XIII. 148.
 Lactarius, genus of fishes, XII. 298.
 Lactation, XIV. 441.
 Lacteals, II. 803; III. 62—discovery of, II. 761—wanting in the invertebrata, XII. 27.
 LACTHO, in India, XIII. 148.
 Lactic acid, VI. 512, 516; IX. 758.
 Lactiferous vessels, in plants, V. 71, 72.
 Lactuca verosa, a poison, XIV. 437, 438.
 Lactucarium, opiate, XI. 743; XIV. 437.
 Lacunar, in architecture, III. 510.
 LADAK, in Asia, XIII. 149.
 Ladanum, V. 183; XVI. 121.
 Ladies of the household, XI. 776—of the bedchamber, *ib.*—Sir Robert Peel's proposal to displace, XVII. 364.
 —orders of knighthood for, XIII. 123.
 Ladikiyeh, or Latakia, XIII. 246.
 Ladislaus (Posthumus), XII. 18.
 LADOGA, Russian lake, XIII. 150; IX. 584; XVII. 492; XIX. 516.
 LADRONE ISLANDS, XIII. 150; XVIII. 268.
 LADY, XIII. 150—lady's horse, XI. 653.
 Lady-bird, insect, IX. 152.
 LADY-DAY, XIII. 150.
 LÆLIUS SAPIENS (C.), XIII. 150.
 Læmargus, sub-genus of fishes, XII. 325.
 Læmodipoda, genus of Crustacea, VII. 542.
 Læna, genus of insects, IX. 132.
 LAENNEC (R. T. Hyacinthe), XIII. 150—stethoscope invented by, XX. 694.
 LÆSTRYMONES, fabulous giants, XIII. 151.
 Laet (De), on birds, XVI. 725.
 LAFAYETTE (Gilbert Mottier), XIII. 151; X. 51 *et seq.*, 122, 196—death of, 210—his aid to the Americans, V. 483; XXI. 437—his friendship with Washington, 759.
 —(Madame), XXI. 759.
 —town in North America, XIII. 151.
 Lafitte (M.), X. 200 *et seq.*, 204.

LAF—LAK

- Lafreinsage (Baron F. de), his work on insects, IX. 15.
 Laganinae, echinoderms, XXI. 991.
 Lagny, on the quadrature of the circle, I. 700; XX. 523.
 Lagoa dos Patos, lake in Brazil, XIX. 176.
 LAGO-MAGGIORE, XIII. 151, 644, 810; XII. 637; XIX. 633; XXI. 248—*islands in*, V. 54—temperature of, VI. 777.
 Lagomys, genus of mammalia, XIV. 188.
 LAGONEGRO, in Naples, XIII. 151.
 LAGOON, XIII. 151—on the shores of the Adriatic, 644.
 Lagopus, genus of birds, XVI. 791.
 LAGOS, Portuguese town, XIII. 151.
 —in Western Africa, XIII. 151.
 LAGOSTA, island, XIII. 151.
 Lagostomus, fossil species of, XVII. 173.
 Lagothrix, genus of mammalia, XIV. 142.
 LAGRANGE (Joseph Louis), XIII. 152; I. 809, 810—his application of continued fractions to the solution of numerical equations, 706—on the calculus of variations, 716, 785—sketched the theory of derivative functions, 601—discussed the chief difficulties of the theory of hydrodynamics, 723—on the lunar and planetary motions, 785—his solution of the problem of disturbing forces, 786—compared with Laplace, 821—on the voluminous nature of mathematical literature, 804, n. 2—his writings, 813—his private character, 814—on waves, XII. 73—on the calculus of sines, II. 555—his astronomical discoveries, III. 811—on the strength of columns, VI. 250—on the orbits of comets, VII. 168—on the propagation of sound, II. 104—on dynamics, VIII. 365—on equations, IX. 289, 299, 306, 308—on fluxions, 677.
 Lagria, genus of insects, IX. 133.
 Lagriariae, family of insects, IX. 133.
 LAGUNA, in Teneriffe, XIII. 157; VI. 166.
 —de Bay, lake, XIII. 742.
 Lagunes, XVII. 583. See Lagoons.
 Lahire. See Hire (Philippe de la).
 LAHORE, in Hindustan, XIII. 157; V. 670; XI. 509; XVIII. 690—railway, 689—climate, *ib.*—meteoric stone in, XIV. 629—rock salt of, XI. 457—captured by the Sikhs in 1756, XVIII. 692.
 Laicharting (N. de), his work on insects, IX. 7.
 Laidlaw (William), XI. 556.
 LAIGLE, French town, XIII. 158.
 LAING (Malcolm), historian, XIII. 158—his memoirs of Dunbar, VIII. 245 *et seq.*—on Ossian, XVII. 6—his character of Spotswood, XX. 518.
 —(Mr), on the agriculture of Denmark, VII. 747—his account of Norway, XVI. 320 *et seq.*
 —(Major), his travels in Africa, II. 210—reaches Timbuctoo, X. 477.
 —(Captain), III. 726.
 Lair (Pierre-Aimé), on Cherbourg docks, V. 305, 306.
 Laird (Macgregor), his expedition to the Tschadda branch of the Niger, XVI. 266—his iron steam-vessels, XX. 137.
 Laire on early printed books, IV. 708.
 LAIRESSE (Gerard), painter, XIII. 158.
 Lake, (Lord), XI. 504 *et seq.*—his attack on Bhurtpore, IV. 693—his capture of Allyghur, II. 595—his victory at Laswaree, XIII. 246.
 —OF THE THOUSAND ISLES, in North America, XIII. 158.
 —OF THE WOODS, in North America, XIII. 159.
 —pigment, VIII. 284.
 —trout, III. 156.
 Lakes, X. 483; XVII. 591—*influence of the sun's rays on*, VI. 777—height of, among the Alps, II. 625—their temperature at different depths, VI. 777—in landscape gardening, XVII. 772—in Scotland, XIX. 794—sea lochs in, *ib.*—in Cumberland, VII. 578—of England, VIII. 716—of Europe, IX. 385—of Egypt, VIII. 428—of Canada, VI. 136 *et seq.*—

LAK—LAM

- salt-lakes, XVII. 591—lake basins, *ib.*—tepid lakes in Portugal, XVIII. 393.
 See the different Countries of the World.
 Lakono, king of Bary, XVI. 270, 271.
 LALANDE (J. J. Lefrançois de), XIII. 159—his astronomical labours, III. 806—on the sun's motion, IV. 28; and spots, 30—on the diminution of the obliquity of the ecliptic, 13—his catalogue of stars, 95; I. 836—spiders swallowed by, III. 379—on a fall of meteoric stones, XIV. 630.
 —(Leon), his work on the Lepidoptera of France, IX. 16.
 Lally (Count), XI. 485.
 Lama, XIV. 205. See Llama.
 Lamalmon mountains, in Abyssinia, II. 55.
 LAMARCK (J. B. P. Antoine de Monnet), XIII. 162—his classification of the mollusca, III. 183—of animals, 175, 176—of the infusoria, 194—first made the arachnides a separate class, 367—his system, 369—on the relations between comparative organizations, 187—on the appendiculated infusoria, 202—on the eyes of the cercaria, 203—on the crustacea, VII. 540—his division of the annelides, XI. 294—absurdity of his views regarding the development of different forms of animals, III. 189, n.—on the brain, XVII. 560—on zoophytes, XXI. 976 *et seq.*—his arrangement of the echinoderms, 986.
 Lamarque (General), X. 207.
 Lamartine, X. 197, 232—on the use of coffee in the East, VII. 54—his History of the Restoration, X. 187—on the conduct of Charles X., 193—his poetry, XVIII. 117.
 LAMAS, Buddhist priests, XIII. 163—religion of, in Ladak, 149.
 LAMB (Charles), XIII. 163—Talfourd's Life of, XXI. 7—his criticism on Hogarth, XI. 555—on Haywood, 366.
 —(Wm.), Lord Melbourne, XIII. 164—his administration, V. 664.
 —and Summer's superheating apparatus, XX. 650—their patent sheet-flue boilers, 651.
 LAMBALLE, French town, XIII. 164.
 —(Princess de), X. 67, 69.
 Lambay, island, VIII. 214, 215.
 Lambdoidal suture, III. 27.
 LAMBERT (John), XIII. 164.
 —(Daniel), VII. 414.
 —(JOHANN HEINRICH), XIII. 165—his character as a philosopher, I. 189, and n. 3—incommensurability of the circle first demonstrated by, 700—his treatise entitled *Photometria*, 754—on the orbit of comets, VII. 168—his Theorem, *ib.*, 175—his dial, 792—his *Pyrometrie*, I. 946—on breast-wheels, XII. 165—on heat, I. 946; XI. 262—on magnetism, XIV. 5—on the height of the atmosphere, 719—on mortality, XV. 633—on optics, XVI. 535—photometry, XVII. 555—on acoustics, XXI. 360.
 —, painter, XVII. 79.
 Lambertini (Prosper), IV. 645.
 Lambeth, XIII. 660; XX. 836, 837—palace, XIII. 669—founded by Baldwin, IV. 394—library, XIII. 395.
 Lambinet's work on the origin of printing, IV. 707.
 LAMBOURN (Chipping), town in Berks, XIII. 168.
 Lambs, management of, II. 353—lambing season, 348, 352—flesh of, IX. 762—leather from the skins of, XIII. 305.
 Lambton (Col.), his measurement of an arc of meridian, I. 775, 853; IX. 552.
 —(Mr), his reform bill, V. 632.
 LAMEGO, Portuguese town, XIII. 168.
 Lamellari, genus of Mollusks, XV. 384.
 Lamellibranchiata, class of Mollusks, XV. 340, 322—fossil, XVII. 105—classification of, XV. 347—generation and development of, 354.
 Lamellicornes, family of insects, IX. 117.
 Lamelliostres, family of birds, XVI. 815.

LAM—LAN

- LAMENNAIS (Felicité Robert), Abbe de, XIII. 168.
 LAMIA, town in Greece, XIII. 168.
 —, genus of insects, IX. 146.
 Lamiaceæ, nat. ord. of plants, V. 202.
 Lamiariae, family of insects, IX. 145.
 Laminated structure in volcanoes, XXI. 604.
 Lamination, in rocks, XV. 154, 156, 158.
 Lamlash, in Arran, III. 676; VI. 27.
 LAMMAS, XIII. 168.
 Lammer-geyer, bird, XVI. 740; II. 626.
 LAMMERMOOR HILLS, XIII. 169; IV. 679; XI. 177.
 Lamna, genus of fishes, XII. 322, 324—fossil, 341—section of tooth of, XVI. 411—jaw and teeth of, 422.
 Lamnidae, family of fishes, XII. 322, 324.
 Lamnodus, genus of fossil fishes, XII. 337.
 Lamoral (Count Egmont), XI. 563, 566.
 LAMOTTE-FOUQUE (F. H. K., baron de), XIII. 169.
 LAMP, XIII. 169—manufacture of, at Birmingham, IV. 732—aphlogistic, or flameless, III. 294—Davy's safety-lamp, VII. 124, 671. See Safety-lamps. Argand, III. 524—electrical, VIII. 625—lighthouse lamps, XIII. 469 *et seq.*—Fresnel's mechanical lamp, 473—for microscopes, XIV. 798—lamps for railway signals, XVIII. 778.
 Lampa, in Peru, XVIII. 695.
 LAMPADEPHORIA, XIII. 173.
 Lampangs, people of Sumatra, XX. 805.
 Lampas, an affection in horses, XXI. 564.
 LAMP-BLACK, XIII. 173; XII. 665.
 LAMPEDUSA, or Lampedosa, island, XIII. 173; V. 594; XX. 246.
 Lampern, fish, XII. 228.
 LAMPETER, in Wales, XIII. 173—College, founded by Bishop Burgess, V. 772.
 Lamp-micrometer, XIV. 757.
 Lampong, in Sumatra, XX. 806.
 Lamprey, fish, XII. 228—its respiratory organs, III. 113—as food, IX. 763—Dr. Gray's arrangement of the Lampreys, XII. 229.
 LAMPRIIDIUS (Ælius), historian, XIII. 173.
 Lamprima, genus of insects, IX. 128.
 Lampris, genus of fishes, XII. 299.
 Lamprosome, genus of insects, IX. 149.
 Lamprotornis, genus of birds, XVI. 752.
 LAMPSACUS, or Lamsacum, XIII. 173—coins of, XVI. 374.
 Lamp-shells, XV. 336, 337—fossil, XVII. 103.
 Lampugus, genus of fishes, XII. 298.
 Lampyrides, family of insects, IX. 107.
 Lampyrus, genus of insects, IX. 107—*L. noctiluca*; see Glow-worm.
 Lana (F.) on aeronautics, II. 168; IX. 748.
 Lanai, island, XVIII. 270.
 LANARK, XIII. 173—New Lanark, 174—cotton mill at, VII. 215.
 Lanarkite, mineral, XV. 105.
 LANARKSHIRE, XIII. 174—cotton factories in, VII. 451—horses of, II. 398; XI. 662—iron ores of, XII. 540—agricultural statistics, XIX. 796, 797, 798—population, 799.
 LANCASHIRE, XIII. 176; VIII. 754—method of working coal, VII. 121—of making butter, 623—number of mills in, XIV. 252—and power-looms, *ib.*—silk mills, 254—culture of gooseberries in, XI. 718—paper-making in, XVII. 259.
 LANCASTER, XIII. 180—Chancellor of the Duchy of, VI. 411.
 —, in Pennsylvania, XIII. 180.
 —, in Ohio, XIII. 180.
 —(SIR JAMES), XIII. 180.
 —(JOSEPH), XIII. 181—his schools, XV. 822.
 —(Mr), his gun, XI. 128.
 —SOUND, XIII. 181; X. 473; XVIII. 168, 171 *et seq.*

LAN—LAN

- Lancaster Canal, XIX, 11, 12; XIII. 180.
 Lance, spear, III. 665.
 Lancelet, fish, XII. 205, 227, 208.
 Lancelottus (J. P.), Institutes of, VI. 190.
 Lanceolate, leaf, V. 90.
 Lancers, British, III. 665.
 Lancet-arch, III. 481, 510; XX. 733.
 Lanchester, Roman station, VIII. 267.
 LANCIANO, town of Naples, XIII. 181.
 Land, yielding no rent, XVIII. 244—best lands not always first cultivated, 245—evil effects of a minute subdivision of among tenants, VII. 427; and proprietors, 432—tenure of, in Egypt, VIII. 428—rent of, in England, 724—land-measures, foreign, II. 115—formation and reclamation of, from rivers, XVI. 83—as a recipient and communicant of heat, XIV. 643—in physical geography, XVII. 584.
 Landamman, XXI. 494, 496.
 LANDAU, in Bavaria, XIII. 181.
 Land-breeze, III. 737.
 LANDEN (John), XIII. 181—his life, writings, and contributions to mathematics, I. 717, and *n.* 2, 3—on fluxions, IX. 677.
 LANDER (Richard), XIII. 181—his discovery of the termination of the Niger, X. 477; XVI. 266—his second African expedition, II. 210—accompanies Clapperton in his second expedition, VI. 752—his death, XVI. 266—his account of Cuttup, XI. 778.
 LANDERNEAU, town in France, XIII. 181.
 LANDES (Les), in France, XIII. 181; X. 632.
 LANDGRAVE, XIII. 182.
 Landings, in building, V. 739—in staircases, XX. 732.
 LANDON (Letitia Elizabeth), XIII. 182.
 Land-presser, II. 273.
 Land-rail. See Corn-crake.
 Landrecies, X. 87.
 LANDSBERG, Prussian town, XIII. 182.
 Landscape gardening, XVII. 771—painting, VIII. 174.
 Landscapes, beauty of, IV. 543.
 Landserona, battle of, XX. 852.
 LANDSEER (John), engraver, XIII. 182.
 LANDSEND, XIII. 182.
 LANDSHUT, town in Bavaria, XIII. 182; IV. 518.
 Land-soles, XV. 374.
 Land-tax, XXI. 43 *et seq.*, 47—its disastrous influence, 44—in India, XI. 514—act authorising the redemption of, V. 562—in Scotland, XIX. 809—in England, XXI. 45—France, 47.
 Lane (E. W.), his work on the modern Egyptians, VIII. 444—his description of a Turkish bath, IV. 506—on the extent of cultivated land on Egypt, VIII. 421—on the Egyptians, 444, 446, 447, 452—his treatment of Dysentery and Ophthalmia, 423—on Osiris, 438—on the Vocal Memnon, XIV. 492.
 Lane's discharging electrometer, VIII. 621.
 Laneham, his description of a minstrel, XV. 253—on the morris-dance, 598.
 LANFRANC (Archbishop), XIII. 182; VIII. 668, 669.
 Lang (James), his rope-machinery, XIX. 411.
 Langdale (Lord), on bastardy, IV. 493.
 LANGELAND, island, XIII. 183.
 LANGENSALZA, in Prussian Saxony, XIII. 183.
 LANGENSCHWALBACH, in Nassau, XIII. 183.
 LANGHOLM, XIII. 183; VIII. 238—Telford's bequest to, XXI. 146.
 LANGHORNE (John), XIII. 183.
 LANGLAND (Robert), XIII. 184; VI. 434—quotation from, VIII. 795.
 Langley (Batty) on pointed architecture, III. 457.
 LANGON, in France, XIII. 184.
 LANGRES, in France, XIII. 184.
 LANGSIDE, XIII. 184—battle of, XIX. 786.
 Langstaff (Mr), on the luminousness of the sea, XIII. 459.

LAN—LAO

- Langstroth (L.L.), his work on bees, IX. 23.
 LANGTON (Stephen), Archbishop, XIII. 184; VIII. 676, 677—division of the Old Testament into chapters ascribed to, IV. 695.
 LANGUAGE, XIII. 185—probably imparted to our first parents by revelation, I. 449—confusion of, at Babel, 465, 466—improvement of, the means of advancing science and learning, 39—Rousseau and others on the origin and history of, 174, 176, *n.*—superiority of English over French as an instrument of thought, 229, *n.* 2—value of German, in some points of view, 311—Leibnitz on the etymological study of, 136, 262—inadequacy of ordinary language for the purposes of philosophy, 310—academies of languages, II. 70—proposals for a universal, 611—affinities of, 775, 776—antennal language of ants, III. 263—Aristotle on, 552—of brutes, V. 704; XIII. 185—deductions as to the origin and descent of nations from analogies of, VI. 365—metaphorical, IV. 547—figurative, VII. 219—Condillac's theory of its necessity to the development of ideas, 234—on the parts of speech, 235—teaching of, to the deaf and dumb, 675—by gestures, 677, 680—origin of, X. 744; XIV. 559—all languages referable to a common origin, IX. 354—of falconry, XI. 248—languages of the Scriptures, XIX. 833—purpose and properties of, 141—African, II. 221—American languages, 678—Anglo-Saxon, III. 165—Arabia, 359—Celtic, VI. 365, 366—Chinese, 571—Coptic, VIII. 441, 447; XI. 410 *et seq.*—Cornish, VII. 408—Danish, XIV. 559—Dutch, XI. 591—Egyptian, VIII. 441; XI. 409, 412—Etruscan, IX. 360, 356—European, 389—Italian, XII. 659—Javanese, 707—Laplant, XIII. 244—Magyar, XII. 18—Malay, III. 749—Manx, XIV. 246—Norse, VII. 750—Osmanli, XXI. 382—Peruvian, II. 689—Romansch, XX. 890—Russian, XIX. 545—Sanskrit, III. 749; I. 204—Tartar, III. ib.—Thibet, 747—Zend, ib.—faculty of, XVII. 563. See Grammar, Philology, Alphabet, English, French, Greek, Latin, Sanscrit, &c.
 LANGUEDOC, in France, XIII. 229; X. 277—canal of 243; XVI. 54.
 Languria, genus of insects, IX. 151.
 Lanham, in Suffolk, XIII. 252.
 Lanius, genus of birds, XVI. 748.
 Lannes (Marshal), X. 137 *et seq.*, 152.
 LANNION, in France, XIII. 229.
 Lansberg (Philip), III. 578, 801.
 Lansdowne MSS., XIII. 392.
 Lantanium, a metal, VI. 488.
 LANTAO, island, XIII. 229.
 Lantern, in architecture, III. 510—of Demosthenes, 442, 462; IV. 164—magic, XVI. 696.
 —pinions, in clock-making, VII. 36, 37.
 Lantern-fly, IX. 169.
 —shells, XV. 350.
 Lanterns, feast of, VI. 570.
 Lanthanite, mineral, XV. 100.
 Lantoir (Banda), IV. 409.
 LANUVIUM, now Civita Lavina, XIII. 229.
 LANZEROTE, island, XIII. 229; VI. 167.
 LANZI (Luigi), XIII. 229.
 —on the character of Albani as a painter, II. 441—on Domenichino, VIII. 98—on the Etruscans, IX. 356—on painting, XVII. 49 *et seq.*
 LAOCOON, XIII. 230; VIII. 175; XIX. 369.
 Laodamus, geometer, X. 499.
 Laodice, VI. 222.
 LAODICEA, XIII. 230—medical school at, XIV. 453.
 —AD MARE, XIII. 231, 246.
 —Scabiosa, Syrian province, XX. 904.
 LAON, in France, XII. 231; X. 167.
 Laophis, fossil serpents, XVII. 153.
 LAOS, in Asia, XIII. 231; X. 735; III. 735; XX. 231, 233.
 Lao-kiun, Chinese sectary, XV. 761.

LAP—LAR

- Laphria, genus of insects, IX. 234.
 LAPIDARY, XIII. 231—lapidary's compasses, VII. 221—saws, XIX. 678.
 LAPIS-LAZULI, XIII. 232; XV. 75—in Badakshan, IV. 359—Chili, VI. 549—Asturias, IV. 156—Tibet, XXI. 247.
 Lapithæ, their battle with the Centaurs, VI. 371; XIII. 232.
 LAPITHES, XIII. 232; VI. 371.
 LAPLACE (P. S., Marquis de), XIII. 232; I. 814, 822—on the advantages of learned societies, 47—his *Mécanique Celeste*, 800, 821; XIII. 233—on probabilities, I. 223, 814, 819; XVIII. 590—on capillary action, I. 732; VI. 210, 211, 215; XII. 95, 97, 99—on the moon's secular equation, I. 786—his improvements in the lunar theory, 814; on the moon's acceleration, 814; II. 74; III. 812—his theory of Jupiter's satellites, I. 815, 786; IV. 73, 74—his discovery of the causes of the great inequalities of Jupiter and Saturn's motions, I. 814, 815; III. 812—his share in the discovery of the stability of the major axes, I. 812—on the limits of eccentricities and inclinations of the planetary orbits, 812—on the inequalities of the moon's orbit, IV. 105—on the earth's attraction, I. 851, *n.*—his theory of the tides, 816; XXI. 250—on adhesion, II. 140—on the propagation of sound, 105; his correction of the theory of, I. 891—his nebular hypothesis, 843—on the values of annuities, III. 231—on the utility of logarithms, 801—his astronomical discoveries, 812—on barometrical measurements, IV. 465—on cohesion, VII. 57, 58, 59—on the orbits of comets, 168—on electricity, VIII. 531—on meteorolites, XIV. 633—on the diminution of evidence by being transmitted, XV. 266—on heat, XI. 273—on Lagrange, XIII. 154—his excessive love of calculation, 157—on the pendulum, XVII. 380—his character as a physicist and author, I. 820—compared with Lagrange, 821—his public character, ib.—love of analytical display, ib.—his *Système du Monde*, 822—his formula expressive of the relation of the pressure, and temperature of steam, XX. 564.
 LAPLAND, XIII. 233; IX. 386, 387—Linneus's tour in, XIII. 498—mission established in, XV. 271—rein-deer of, XIV. 206.
 Laplanders, IX. 387, 389—in Sweden, XX. 864—their bows, V. 251—language, IX. 390; XIII. 215.
 Lap machine, VII. 443.
 Lapostolle (Mons.), paragres proposed by, VIII. 586.
 Lapwing, XVI. 797—shooting of, XX. 216.
 LAR, Persian town, XIII. 244.
 LARCHER (Pierre-Henri), XIII. 244.
 Larch-bark, used in tanning, XIII. 306.
 Larch-timber, XVI. 101; XXI. 275—durability of, XVII. 755—specific gravity of, XII. 89—its use in joinery, 817—in ship-building, 173.
 Larch-tree, XVII. 756, 765—introduction of into Perthshire, XVII. 459.
 Lard, XVI. 493.
 Lardizabalaceæ, nat. ord. of plants, V. 181.
 LARDNER (Nathaniel, D.D.), XIII. 244—Kippis' edition of his works, 96.
 —(Dr), on the planet Saturn, IV. 92—on evaporation, IX. 408, 409—on smoke, XX. 352.
 LARES, XIII. 245; XVII. 375; I. 514.
 Largo Bay, IX. 794.
 LARGS, village in Ayrshire, XIII. 245.
 Larkhanah, town in Oudh, XX. 305.
 Larks, XVI. 759—of Dunstable, VIII. 262—net for catching, XIX. 93—shooting of, XX. 216.
 Larimus, genus of fishes, XII. 285.
 LARISSA, in European Turkey, XIII. 245.
 LARISTAN, in Persia, XIII. 245.
 LARNE, in Antrim, XIII. 245.
 LARNICA, town in Cyprus, XIII. 245.

LAR—LAT

- Larra, genus of insects, IX. 195.
 Larrates, family of insects, IX. 195.
 Larus, genus of birds, XVI. 812.
 Larva of insects, IX. 53 *et seq.*—of bees, IV. 580.
 Larynx, XVII. 679—muscles of, III. 39—anatomy of, 50—comparative anatomy of, 102—diseases of the, among cattle, XXI. 571.
 LASCARIS (Constantine), XIII. 245.
 —(Andreas Joannes), XIII. 245.
 Las Casas (Bartolommeo de), VI. 306.
 Lasco (John à), XVIII. 456.
 Laserna (General), IV. 833.
 Laslocampa, genus of insects, IX. 213.
 Lasionite, mineral, XV. 74.
 Lasiopetra, genus of insects, IX. 226.
 LAS PALMAS, XIII. 246; or Palma, VI. 166.
 Laspeyres (J. H.), his works on insects, IX. 10.
 LASSA or H'Lassa, capital of Tibet, XIII. 246.
 Lassell (Mr), his observatory near Liverpool, I. 860—his discovery of a satellite of Neptune, and one of Saturn, 860; IV. 92, 94—on the satellites of Uranus, I. 860; IV. 93—on Saturn and his rings, 92—his telescopes, XXI. 128.
 Lassen (Christian), his philological researches, XVII. 529, 534.
 LASUS or Lassus, Greek poet, XIII. 246.
 LASWAREE, in Hindustan, XIII. 246.
 LATAKIA, port in the Levant, XIII. 246.
 Latch locks, XIII. 541.
 Latent heat, XI. 269, 271; XX. 555—Regnault on, I. 958—absorbed in melting ice, 926—Dr Black's discovery of, 760, 926; IV. 738—of vapour, I. 926—of steam, XX. 566, 567, 568, 571—Cavendish's experiments on, I. 930—phenomena explained by, XI. 270, 271; I. 926—Lavoisier on, 932.
 LATERAN, XIII. 247—councils, VII. 465.
 —(St John), basilica, XIX. 368.
 Lates, genus of fishes, XII. 275—fossil, 343.
 LATHAM (John, M.D.), ornithologist, XIII. 247—his works, XVI. 729.
 —(Dr R. Gordon), on language, XIII. 195 *et seq.*—his contributions to philology, XVII. 528.
 —(Dr) his edition of Sydenham's works, XX. 893.
 Lathe for turning, XXI. 390.
 Lathrobium, genus of insects, IX. 103.
 Laths, plastering on, V. 741, 742.
 LATICLAVE, XIII. 247; III. 167.
 Latilus, genus of fishes, XII. 278.
 LATIMER (Hugh), XIII. 247; VIII. 708—his account of cloth-making, XXI. 921.
 Latin church, VI. 713—mysticism in, XV. 755—its claim to the guardianship of the holy places, XIX. 500.
 —language, XIII. 213; IX. 390—its inflections, XIII. 189 *et seq.*—affinities, 213—its want of the article, X. 752—grammars and lexicons, XVII. 526—Bibles, IV. 701; XIX. 840—historical writers in, XI. 548—editions of the classics, IV. 709—moods and tenses, X. 765 *et seq.*, 769—papyri, XVII. 265—Latin poetry, XVIII. 103.
 Latins, XIX. 295—Constantinople taken by, VII. 318.
 Latistellati, echinoderms, XXI. 991.
 Latitude, in astronomy, IV. 6—method of reducing geocentric to heliocentric, 57—tables for the moon's latitude in eclipses, 129, 130.
 —, in geography, X. 480; XVI. 7, 10, 28—mode of finding, IV. 113; XVI. 40—on globes, X. 486—ratio of fertility to, II. 710—as given by Ptolemy, X. 467, 472—distribution of volcanoes in, XXI. 603, 604—in connection with the trigonometrical survey, 335.
 LATITUDINARIANS, XIII. 248.
 LATIUM, XIII. 248.
 LATMUS, mountain, XIII. 248.
 Latopolis, in Egypt, VIII. 513.
 La-tour-du-Piu, in France, XII. 627.

LAT—LAV

- LATREILLE (Pierre-André), XIII. 248—his entomological works, IX. 8, 9, 10—his classification of insects, 9—on entomology, 32 *et seq.*—on the geographical distribution of insects, 67—on ants, III. 261 *et seq.*—his classification of the arachnides, 367, 370, 371—his assistance to Cuvier in the *Règne animal*, VII. 605.
 Latridius, genus of insects, IX. 142.
 Latris, genus of fishes, XII. 278.
 La Trobe (Mr), governor of Tasmania, XXI. 32.
 Latrobite, mineral, XV. 71.
 LATRUNCULI, XIII. 248.
 Latter-day Saints. See Mormonism.
 Lattice-windows, X. 670.
 LAUBAN, Prussian city, XIII. 248.
 LAUD (William), archbishop, XIII. 249—his ecclesiastical and political conduct, V. 393—ascendency over Charles I., 393—accused of high treason, 398—executed, 405—his treatment of Archbishop Leighton, XIII. 322—tutor system introduced at Oxford by, XXI. 455—his constitution for Dublin university, 486.
 LAUDER (Sir Thomas Dick), XIII. 250—on curing herring, IX. 639.
 —town in Berwickshire, XIII. 250.
 Lauderdale (Duke of), his administration in Scotland, V. 429; VII. 629.
 LAUDHON (G. Ernest), Baron Von, Field-Marshal, XIII. 250; XVIII. 653 *et seq.* See Laudon.
 Laudon (Marshal), XXI. 371. See Laudon.
 LAUNEBURG (Duchy of), XIII. 250; VII. 746.
 Laughing-gas. See Nitrous Oxide.
 Laughter, death from, VIII. 192, n. 1.
 Laumonite, mineral, XV. 77.
 LAUNCESTON, town in Cornwall, XII. 250—coining of tin at, VII. 407.
 —in Tasmania, XXI. 31.
 Launch, boat, IV. 800.
 Launching of ships, XX. 205.
 LAURA, XIII. 250.
 Lauraceæ, nat. ord. of plants, V. 204.
 Laurel, order of plants, V. 204.
 —trees, XVII. 761.
 Laurence (Archbishop), on the books of Esdras, IX. 332.
 LAURENCEKIRK, XIII. 250, 89.
 Laurentian library, IX. 666; XIV. 447.
 LAURENTUM, town of Latium, XIII. 250, 248.
 LAURIA, town of Naples, XIII. 250.
 Laurie's floating mattresses, XIII. 440.
 Laurus on aeronautics, II. 168.
 LAURVIE, town in Norway, XIII. 250.
 LAUSANNE, in Switzerland, XIII. 250; XX. 882; XXI. 531—library at, XIII. 424.
 Lauterbourg (Mr and Mrs), mesmerists, XX. 431.
 Lauth (Dr T.), his History of Anatomy, II. 777—on the lymphatics, 804.
 Lauxania, genus of insects, IX. 251.
 Lava, its difference from trap, XV. 190—of Etna, II. 192—Vesuvius, 192, n. —Iceland, XII. 202—lava streams, XXI. 605—dykes and veins of, XV. 191—feldspathic, augitic, and intermediate, 132, 133.
 LAVAL, in France, XIII. 251—linen manufactures of, X. 254.
 LAVATER (Johann Caspar), XIII. 251—on magnetic somnambulism, XX. 442.
 LAVAUR, town in France, XIII. 252.
 LAVENDER, XIII. 252; V. 202; XI. 745—oil of, XVI. 497.
 Lavendulan, mineral, XV. 104.
 LAVENHAM or Lanham, in Suffolk, XIII. 252.
 Laverna, goddess of thieves, I. 459.
 LAVINIUM, city of Latium, XIII. 252, 248.
 LAVOISIER (Antoine Laurent), XIII. 252; I. 932—on heat, 932; XI. 273—his chemical theory of combination and oxidation, I. 932—on the composition of the atmosphere, IV. 180—his air-pump, XVIII. 42—on electricity, VIII.

LAV—LAY

- 531—his death, I. 933; X. 85—his memoir on heat, in common with Laplace, I. 820—his theory of combustion modified by Sir H. Davy, 971.
 LAVORO, Terra di, XIII. 252; XII. 636; XX. 236.
 LAW, XIII. 253—Athenian, IV. 213, 215—English, VIII. 779—French, X. 132, 280—Lombardy, XIII. 645—Egyptian, VIII. 440—Mosaic, IV. 694; I. 467 *et seq.*—Chinese, VI. 564—Hindu, XI. 476—Scottish, XIX. 750; its difference from that of England, 811—Venetian maritime, VII. 533—Academies of, II. 69—the Economists on, VIII. 379—Institution connected with, in London, XIII. 672—Courts of, in Edinburgh, VIII. 395—constitutional, 781—of the relations of private life, *ib.*—Roman actions at, II. 119—capitularies, VI. 220—Jury trial, XIII. 22—law language and literature, 271—laws regarding the insane, XIV. 538—martial law, XV. 5—duty of obedience to, 570—maritime, declaration respecting, XVI. 157—Plato on, XVII. 810, 811—taxes on law proceedings, XXI. 65—Schools of, in United States, 494. See Canon Law, Civil Law, Code, Courts, Crime, Feudal Law, Jurisprudence, Law of Nations, Law of Nature, Legislation, Medical Jurisprudence, Police, Prisons, Punishment, *etc.*
 —making, XIII. 267.
 —Mosaic. See Mosaic.
 —OF NATIONS, XIII. 279—blockade, IV. 786—are all treaties annulled by war? V. 588. See Balance of Power.
 —of Nature, XIII. 253, 254.
 —(John), projector, XIII. 292; X. 35—his schemes opposed by d'Aguesseau, II. 429.
 —(EDMUND), bishop, XIII. 295—his notes to his translation of Archbishop King's work on the Origin of Evil, I. 170—his speculations on space and time, *ib.*, n. 2—his ethical works, 171-2.
 —(WILLIAM), XIII. 296.
 Laws of the Twelve Tables, VI. 739; XIX. 301.
 Lawburrows, taken out by Charles II. against his Scottish subjects, V. 429.
 Lawyers (Ben), mountain, botany of, XVII. 458.
 Lawes (Mr), his agricultural practice, II. 293, 309.
 LAWN, XIII. 296, 495.
 LAWRENCE (Sir Thomas), painter, XIII. 296; XVII. 56.
 —(Sir Henry), XVI. 307.
 —(Sir John), XVI. 308, 309; XVIII. 694.
 —(Sir James), on nobility, XVI. 281.
 —(Mr), his mode of preparing varnish for etching, VIII. 811.
 —town in Massachusetts, XIII. 297.
 —(Str), GULF OF, XIII. 297.
 —(Str), river, XIII. 298; II. 675; VI. 133, 140; XV. 521; XVI. 214; XVII. 600, 605, 647—shores of, VI. 132, 133—trade of, 148-9—canals, XV. 522; VI. 155.
 Lawson (Messrs), on grasses and pasture plants, II. 324—on the varieties of the potato, 315.
 Lawyers, diseases of, XIV. 442.
 Laxford (Loch), XIX. 794.
 Layard (A. H.), on the buildings of Assyria and Babylonia, III. 499 *et seq.*—on the honeysuckle ornament in architecture, 501—on the ruins of Babylon, IV. 343—magnifying lens found at Nimroud by, XIV. 763—his discoveries at Nineveh, XVI. 274—on impressions on Assyrian bricks and tablets, XVIII. 521.
 LAYBACH, Austrian town, XIII. 298—congress at, V. 631; XII. 655.
 Laycock (Prof.), on the action of the brain, XVII. 560.
 Layers, propagating by, XI. 694, 703; V. 167; XVII. 767.
 Laying-off, in ship-building, XX. 183.

LAY—LEA

- Layne (James), Jesuit, XII. 751.
 Layon, canal of, XVI. 6, n.
 Lazarettos, XIV. 445—Howard's examination of, XI. 785, 786—at Marseille, XIV. 317.
 LAZARITES (The), priests, XIII. 298.
 Laziens, coast of the, IV. 744.
 Lazulite, mineral, XV. 73.
 LAZZARONI, XIII. 298—of Naples, X. 110.
 Le or Leh, in central Asia, XIII. 298.
 Lea, river, XI. 359.
 —(Isaac), on the American Naiadae and species of Unio, XV. 349, 328.
 Leach (Dr), on the crustacea, VII. 540, 544—on the myriopoda, XV. 747—his contributions to entomology, IX. 13.
 Leachia, genus of mollusks, XV. 400.
 LEAD, XIII. 298; VI. 497; XV. 66, 114—its use in assaying, III. 770—sheet-lead, V. 755—compounds of, VI. 497—use of its salts in calico-printing, &c., 497—its protoxide as a mordant, VIII. 280—chromate of, used in dyeing, 297, 318—window-frames of, X. 670—specific gravity of, XII. 88—its poisonous quality, XIV. 433—produce in Great Britain, XV. 242—exports from Newcastle, XVI. 167—culinary utensils made of, XIV. 440—distribution of, XVII. 621—silver in Europe, mostly obtained from, XVIII. 462—as a covering for roofs, XIX. 374—action of water on, 617—cohesion of, XX. 757—white lead, XIII. 310; specific gravity of, XII. 88—black-lead, see Plumbago—red-lead, XIII. 302. See Lead mines.
 —glance, XV. 117.
 —mill, X. 670.
 —mines, in Britain, XIII. 298; XV. 242, 243, 244—Cardiganshire, VI. 233—Cumberland, VII. 577; XVI. 167—Derbyshire, VII. 754—Durham, VIII. 266—England, 727—Clare, VI. 753—Hindustan, XI. 457—Ireland, XII. 506—Europe, IX. 387; XV. 242—Illinois, XII. 362—United States, XV. 241—Montgomeryshire, 518—Missouri, 280—of Wanlockhead and Leadhills, VIII. 238; XIII. 175; XV. 246; XIX. 790—Scotland, 804—Shropshire, XX. 229—Spain, 489. See the Geographical Articles.
 Leadenhall market, XIII. 664.
 Leadhillite, mineral, XV. 105.
 LEADHILLS, XIII. 302, 174; XIX. 790—minerals found in, XIII. 175—gold obtained from, XV. 233.
 Lead-ochre, XV. 112.
 Lead-salts, XV. 104.
 Lead-spar, XV. 105.
 Leadwort, order of plants, V. 203.
 Leaf. See Leaves.
 —eating bees, IX. 199.
 —stalk, V. 92.
 LEAGUE, measure, XIII. 302.
 —or alliance; French Catholic, X. 33—Solemn League and Covenant, V. 404; VII. 469—Anti-corn-law, 383; XIV. 256—Amphictyonic and Achæan, IX. 497; II. 727.
 Leake (Col.), on the topography of Athens, IV. 161 *et seq.*—on Laodicea, XIII. 230—on Laconia, 148—on the means of reaching the sources of the Nile, XVI. 269—on Greek coins, 359, 360.
 —(RICHARD), XIII. 302.
 —(SIR JOHN), English admiral, XIII. 302.
 LEAMINGTON, in Warwickshire, XIII. 302; XXI. 739—its mineral waters, XV. 37.
 Lean (Captain Joel), his plan for ascertaining engine duty, XV. 227.
 LEANDER, XIII. 303; XI. 354.
 Leao-Tong, Chinese province, XX. 116.
 LEAP, in music, XIII. 158.
 Leap-year, VI. 77.
 Leaping, action of the muscles in, III. 42—of horses, XI. 650, 662.
 Lear (Mr), on parrots, XVI. 733.
 LEARCHUS, Greek sculptor, XIII. 303; XIX. 852.
 Learning, revival of, in Europe, VII. 535;

LEA—LEE

- I. 14; XIII. 387-8—scholastic, XVII. 521—patronage of ancient, in fifteenth century, 522.
 LEASE, XIII. 303—during the middle ages, II. 252—in ancient Attica, IV. 218.—(agricultural), VIII. 725—advantages and duration of, II. 365; in Scotland, XIX. 799—in Ireland, XII. 513—in Prussia, XVIII. 665.
 LEATHER, XIII. 305—currying of, VII. 595—manufacture of, in England, VIII. 730—France, X. 256—Morocco, XV. 595.
 Leaven, in baking, IV. 380.
 Leaves of plants, V. 85—vernation of, 86—atomy or structure of, 87—vascular system of, 88—venation, conformation, and transformations of, 88, 89, 93—physiology of, 102—absorption and exhalation by, 103—their influence on vegetable secretions, 106—effects of gases upon, *ib.*—coloration of, 107—irritability and contractility of, 108—defoliation, 109; VII. 698—time of unfolding, in different latitudes, V. 220—propagation by single, XI. 694—functions of, XXI. 268.
 LEBADEA, town in Boeotia, XIII. 311.
 Lebaillif's sideroscope, XIV. 89—his electric multiplier, XXI. 642.
 Lebanon, XIII. 355; XVII. 182; XX. 902—inhabitants of, 904—climate, 906—cedar of, V. 209; XVII. 756, 757, 760.
 —fossil fishes of, XII. 354, 355.
 Lebia, genus of insects, IX. 82.
 Lebiasina, genus of fishes, XII. 251.
 Leblanc on crystallization, VII. 546, 548.
 Lebon, X. 93, n. 1.
 Lebreux (F. L.), his work on insects, IX. 15.
 LEBRIJA, town in Spain, XIII. 311.
 Le Brun. See Brun (Charles le).
 Lecanu (Louis René), on the blood, II. 781.
 LECCE, town of Naples, XIII. 311.
 Lecco, in Austrian Italy, XIII. 311.
 Lech, Prince of Poland, XVIII. 137.
 Lechevalier, on the site of Troy, XXI. 356, 357, 358.
 Lechler on the Presbyterian church, XVIII. 485 *et seq.*
 Lechuga (Christobal), his classification of cannon, XI. 136.
 Lecomte's attempt on the life of Louis Philippe, X. 224.
 Lecomte (J. L.), his works on insects, IX. 23.
 Lecount (Mr), on magnetism, XIV. 41.
 LECTISTERNIUM, XIII. 311.
 LECTOURE, town in France, XIII. 311.
 LECTURE, XIII. 312—right of publishing lectures, VII. 359.
 Lecythidaceæ, natural order of plants, V. 192.
 LEDA, XIII. 312; VIII. 36.
 —fossil mollusks, XVII. 106.
 LEDBURY, in Herefordshire, XIII. 312; XI. 349, 350.
 Lederite, mineral, XV. 77.
 Ledger, V. 23—balancing of, 27—size and index to, 28.
 Ledges of ships, XX. 187.
 Ledra, genus of insects, IX. 170.
 Lee, river in county of Cork, VII. 371.
 —(Sir H.), saved by a dog, V. 704.
 —(Mr) his process for bleaching flax, IV. 768.
 —(NATHANIEL), XIII. 312.
 —(John, D. D.), XXI. 482.
 —(SAMUEL, D. D.), XIII. 312.
 —(Harriet), her novels, XIX. 270.
 —(William) alleged inventor of the stocking frame, XX. 706.
 LEECHES, XIII. 312; XI. 303, 305—green leech 305—bleeding of, 304—horse-leech, 306—land leeches, 302 n; in Assam, III. 764—American, XI. 305, n. 2—among the Himalayas, 444—absurd practice of applying them to bruised parts, XX. 830—fossil leeches, XVII. 118.
 LEEDS, town in Yorkshire, XIII. 312—

LEE—LEI

- "Mercury," newspaper, XVI. 186—rule for estimating horse power in steam-engine, XX. 602—woollen manufactures, XXI. 918, 919—wages, *ib.*
 LEEK, in Staffordshire, XIII. 316.
 —, plant, V. 79, 88—culture of XI. 741.
 Leemans (Dr.) on the demotic characters of a papyrus, XI. 377.
 LEER, town of Hanover, XIII. 316.
 LEEUWARDEN, town of Holland, XIII. 316.
 Leeuwenhoek. See Lëuwenhoek.
 LEEWARD ISLANDS, XIII. 316.
 Leeway, XVI. 13; XX. 4.
 Lefebvre (A.), his works on insects, IX. 15.
 Lefebvre (Marshal), X. 154.
 Lefevre (Tannegui), IX. 526.
 LEFKOSIA, in Cyprus, XIII. 316; XVI. 255.
 Lefroy (Lieut. Col.), his tables of ranges for ordnance, XI. 146.
 Leg, muscles of the, III. 39—station on, 41—motions of, 42—legs of insects, IX. 42.
 Legacy-duties, XXI. 64—objection to, 67.
 Legaspe (Lopez de) his visits to the Ladrones islands, XVIII. 268.
 Legate, XVI. 392.
 LEGATION, XIII. 316. See Diplomacy, Ambassador.
 Legat (F.), on engraving, VIII. 805.
 LEGATUS, XIII. 316.
 Leg-bone, III. 35—in the mammalia, 82—in birds, 86.
 LEGENDRE (Adrien Marie), XIII. 316; I. 822—his researches on elliptical functions, *ib.*—on the attraction of ellipsoids, 823—his method of least squares, 819; XVIII. 635—on the orbits of comets, VII. 169, 170, 176—on the figure of the earth, IX. 552, 565—his work on geometry, X. 505.
 Leg-evil in sheep, XXI. 563.
 LEIGHORN, XIII. 316—improved by Sir Robert Dudley, VIII. 229.
 —, bonnets, XI. 243.
 LEGION (Roman), XIII. 318; III. 630—its mobility, III. 634—the thundering legion, III. 280, *n.*; XIX. 344.
 —, of Honour, X. 126, 280; XV. 793.
 Legislation, XIII. 262—of Draco and Solon, IV. 213—limits of its action, XIII. 264—over-legislation, 265—and jurisprudence, different senses of the terms, 267—medical, XIV. 45—for railways, XVIII. 796; reform in, 797.
 Legislature, XIII. 267—of the United States, XXI. 429.
 LEGITIMACY, XIII. 318—by subsequent marriage, XVII. 274.
 Legume, V. 136.
 Leguminosæ, nat. ord. of plants, V. 190.
 Leguminous plants, V. 136, 190—culture of, XI. 738—crops, II. 312—used as food, IX. 760—seeds of, XVII. 769.
 Lehmann (J. G.) on the papillæ of the nerves, II. 816.
 Lehrbachite, mineral, XV. 117.
 Lehuntite, mineral, XV. 75.
 Leia, in the Punjab, XVIII. 690, 691.
 —, genus of insects, IX. 229.
 Leiacanthus, genus of fossil fishes, XII. 340; XVII. 117.
 LEIBNITZ (Gottfried Wilhelm), XIII. 318—on the merits of Descartes, Hobbes, Bacon, and Campanella, I. 26—his objection to Malebranche's views regarding cause and effect, 78—his veneration for the Roman law, 92—his misapprehension of Locke's doctrines on the origin of knowledge, 113—his school, and its distinction from that of Locke, 122—effects of his comprehensive correspondence, 123—on the expediency of literary intercourse among men of science, 123, *n.*—coincidence between him and Cudworth concerning innate ideas, 123—the metaphysical theories to which he chiefly directed his attention, 124—the doctrines of pre-established harmony, 124, 125—contrast between his speculations and the philosophy of Locke,

LEI—LEI

- 126—his scheme of optimism, 127—his work entitled *Theodicaea*, 126, 127 *n.*, 129 and *n.* 4—maintained necessity, but opposed materialism, 128—on the soul, 128—injurious influence of the doctrine of fatalism, as treated by him, 129—on the principle of a sufficient reason, 130, 652, 653—his theory of monads, 131, 255; VIII. 327—on the law of continuity, I. 132, 257-8, 653—on the states of rest and motion of bodies, 257—on the existence of the soul after death, 259—his habits of thinking biased by geometry, 259—extension of his principle regarding the law of continuity by Helvetius, 135—on the etymology of languages, 136, 262—his proposition that all proper names were at first appellatives, 260—his genius, 137—credulity, 138, 261—value of his speculations in advancing knowledge, 138—estimate of his character by Bailly, 262—great variety of subjects on which he wrote, 262—his controversy with Dr Clarke, 139; VI. 758—on space and time, I. 142 *n.*—small progress of his doctrines in France, 185, 186—contrast between the form of his writings and the character of his mind, 353—favourite maxim of, 353—his ethical principles, where to be found 353—citations from, on ethics, 353, 438, 439—on disinterested affections, 354—egregious fallacy contained in a statement of, 354, 355—his correspondence with Newton on geometry, 636—was the second inventor of the new infinitesimal analysis, *ib.*; IX. 671—rapid spread of his geometry on the continent I. 636—controversy regarding the new calculus, 637; IX. 672; XVI. 206—his rejection of the higher powers of the differences of the variable quantities objectionable, 642—comparison between him and Newton, 687—his algebraical discoveries, 711—great promoter of the Berlin Academy of Sciences, II. 65—an algebraical discovery of James Gregory claimed by, 559—hydrostatical fancy of, IV. 459—his classification of books, 715—inactivity of matter denied by, VIII. 327—on the laws of motion, 338, 341, 343—his envious detraction of Sir Isaac Newton, 354—on a universal character, VI. 417—his project for remodelling the Pandects, VII. 586—on the distinction between intuitive and symbolical cognition, XIV. 585, and *n.* 4—on evil, IX. 420—on music, XV. 701—problem proposed by, in 1687, IX. 675—on metaphysics, 557 *n.*, *et seq.*—on the force and velocity of moving bodies, I. 654—philology advanced by, XVII. 528—on the strength of materials, XX. 763—on the cosmological argument for the existence of God, XXI. 186.
 LEICESTER, XIII. 319—population, 321—medieval roofs at, XIX. 392, 393.
 —, Earl of, VIII. 713; XI. 571.
 LEICESTERSHIRE, XIII. 320; VIII. 754—sheep, II. 263, 345—poor-rates in, XVIII. 309 *n.* 1—lace manufacture, XIII. 145—wool, XXI. 905.
 Leichhardt (Ludwig), his explorations in Australia, IV. 257.
 LEIGH (Edward), XIII. 321.
 —, town in Lancaster, XIII. 321.
 Leighs (loch) in Cavan, VI. 348.
 LEIGHTON (Robert), Archbishop, XIII. 321.
 —, (ROBERT) Archbishop, XIII. 322; XX. 840.
 LEIGHTON-BUZZARD, XIII. 324; IV. 569.
 LEINE, river, XIII. 324.
 LEINSTER, in Ireland, XIII. 324.
 Leiodes, genus of insects, IX. 131.
 Leiodon, fossil reptiles, XVII. 153.
 Leiostoma, fossil mollusks, XVII. 110.
 Leiostomus, genus of fishes, XII. 285.
 LEIPZIG or Leipzig, XIII. 324—fairs of, IX. 468; X. 590; XIX. 685—battles of,

LEI—LEN

- X. 164, 580; XVIII. 657; XX. 850—taken by Tilly, XX. 849—university of, XXI. 492—book trade of, X. 592; V. 31—libraries, XIII. 420.
 Leir, in glass-making, X. 672.
 LEIRIA, Portuguese town, XIII. 325.
 Leistus, genus of insects, IX. 98.
 LEITH, XIII. 352—water of, VIII. 394, 408—docks of, 75—meteorological observations at the Fort of, XIV. 670—first Scottish newspaper published at, XVI. 184.
 LEITMERITZ, town of Austria, XIII. 327.
 LEITRIM, Irish county, XIII. 327—agricultural statistics, XII. 516, 517.
 Leirurus, genus of fossil fishes, XII. 232.
 LEIXLIP, Irish town, XIII. 329.
 Lejah, basaltic region in Syria, XX. 903.
 LELAND (John), antiquary, XIII. 330—his notice of Birmingham, IV. 729—of Chaucer, VI. 432—Manchester, XIV. 284.
 —, (JOHN, D.D.), XIII. 330.
 —, (THOMAS), XIII. 330.
 LELY (Sir Peter), painter, XIII. 330; III. 714.
 Leman (Lake). See Geneva, lake of.
 Lemandé (M.), his iron bridges, XII. 581-2.
 LEMBERG, in Austrian Poland, XII. 330—university of, XXI. 492.
 LEMGO, German town, XIII. 331.
 Lemma, Geometrical term, X. 508.
 Lemming, in zoology, XIV. 183; IX. 387.
 Lemnaceæ, nat. ord. of plants, V. 214.
 Lemniscate, X. 545.
 LEMNOS, island, XIII. 331—labyrinth in, 141.
 LEMON, XIII. 331; V. 186; XI. 729—juice of, a cure for scurvy, XVI. 106—oil of, 496. See Citric Acid.
 —, salt of, XIII. 331.
 —, grass, V. 216.
 —, (Mr), his discovery of a treatise by Milton, XV. 30.
 LEMONNIER (P. C. Charles), XIII. 331—his astronomical labours, III. 806—on the electricity of the atmosphere, VIII. 578—on the orbits of comets, VII. 168—his intercourse with Lalande, XIII. 159.
 Lemur, genus of mammalia, XIV. 145—its arteries, III. 112—dentition of, XVI. 455—flying lemur, XIV. 150.
 Lemuridae, family of mammalia, XIV. 144.
 LENA, river, XIII. 333; XVII. 605, 606, 647; XIX. 548.
 Lenæum, in ancient Athens, IV. 164.
 Lenita, fossil echinoidea, XVII. 100.
 L'ENFANT (Jacques), XIII. 333.
 Lengren (Anna Maria), Swedish poetess, XIX. 699.
 Length, measures of, XXI. 808.
 LENNEP, Prussian town, XIII. 333.
 Lenni Lenapi, Indians, II. 696.
 LENNOX, XIII. 333. See Dumbartonshire.
 —, (Duke of), James I.'s patent to for woollen manufactures, XXI. 915.
 —, (Earl of), regent of Scotland, XIX. 787.
 —, Hills, XX. 702.
 LENNOXTOWN, in Stirlingshire, XIII. 333.
 Lenocinium, XII. 55.
 Lenormant (C.), on the value of the shekel, XVI. 379, *n.* 1.
 Lens, XIII. 452—crystalline, III. 44, 95; XIII. 461; XVI. 541; XVII. 678—burning, VI. 1 *et seq.*; XI. 275—lenses for lighthouses, XIII. 472, 474, 480—for microscopes, XIV. 763 *et seq.*—aberration of, XIV. 771—different kinds of, XVI. 561, 574—refraction by, 564, 565 *et seq.*—formation of images by, and vision of objects through, 567—form of the images of objects produced by lenses of different sizes, 569—spherical aberration of, 571—non-spherical, 574—doubly refracting, 628—defects of large lenses for taking portraits, 569, 570; XVII. 553—lenses of telescopes, XXI. 134 *et seq.*
 LENT, XIII. 333—in the Greco-Russian

LEN—LEP

- church, XIX. 527—term at Cambridge, XXI. 463.
 Lentibulariaceæ, nat. ord. of plants, V. 203.
 Lenticular spar, crystallization of, VII. 552, 555.
 LENTIL, XIII. 333; V. 89—culture of, II. 313.
 LENTINI, town in Sicily, XIII. 333.
 —, lake, XX. 243.
 Lentulus (Publius), his alleged letter to the Roman senate, XII. 765, and *n.* 1.
 LEO I. (Flavius), emperor, XIII. 333.
 —, III., the Isaurian, XIII. 334; XII. 642—his edict against image worship, XIII. 641.
 —, V., the Armenian, XIII. 334.
 —, of Byzantium, historian, XIII. 334.
 —, Diaconus, XIII. 335.
 —, Grammaticus, XIII. 335.
 —, of Thessalonica, XIII. 335.
 —, X. (Pope), XIII. 335—sale of indulgences by, XII. 377—life and pontificate of, XIV. 448—age of, 459—Roscoe's life of, XIX. 418.
 —, of Modena, on the Caraites, VI. 228.
 —, de Juda, on the Caraites, VI. 228.
 —, (LEONARDO), musician, XIII. 336.
 —, constellation, IV. 12, 80.
 LEOBEN, Austrian town, XIII. 336.
 LEOCHARES, Athenian sculptor, XIII. 336.
 LEOMINSTER, in Hereford, XIII. 336—wool of, XXI. 910.
 LEON, in Spain, XIII. 336, 337; XX. 493—Moorish kingdom of, XX. 461.
 —, town in Central America, XIII. 337.
 —, (ISLA DE), XIII. 337.
 —, (NUEVO), Mexican State, XIII. 337; XIV. 718, 728.
 —, (PETER CIEÇA DE), XIII. 337.
 —, geometer, X. 499.
 —, (Ponce Luis de), poetry of, XVIII. 114.
 Leonardo of Pisi, algebra introduced into Europe by, I. 556; II. 483; X. 504.
 —, da Vinci. See Vinci.
 Leonards (St Lord) on the law of copyright, VII. 362—on the usury laws, XII. 430—his error regarding the Theodosian code, VI. 743.
 —, (St) College, St Andrews, XXI. 473—its union with St Salvator's, 474.
 LEONFORTE, town in Sicily, XIII. 337.
 Leonhardtite, mineral, XV. 77.
 Leonidas, king of Sparta, XX. 500.
 LEONINE VERSES, XIII. 337.
 Leontes, Syrian river, XX. 903.
 Leopard, XIV. 169—in India, XI. 445—in Java, XII. 704.
 Leopard's bane, plant, V. 197.
 LEOPARDI (Giacomo) Count, XIII. 338.
 Lepidolite, mineral, XV. 78.
 Lepidomelane, mineral, XV. 78.
 Leopold, king of the Belgians, IV. 608; X. 205—letters of Louis Philippe to, X. 220.
 —, III., Duke of Austria, XX. 884.
 —, (Prince) of Dessau, XVIII. 650 *et seq.*
 —, (Carl Gustav), Swedish poet, XIX. 698.
 Leopoldine Academy, II. 62.
 Lepadidæ, fossils, XVII. 101.
 Lepadogaster, genus of fishes, XII. 215, 307.
 LEPANTO, town in Greece, XIII. 339—battle of, XII. 456; XXI. 369.
 Lepaute (Mons.), his escapement, VII. 10.
 Leperditia, fossils, XVII. 101.
 Lepidaster, fossil star-fish, XVII. 99.
 LEPIDI, Roman family, XIII. 339.
 Lepidodendron, fossil plant, V. 235.
 Lepidoganoidei, fossil fishes, XVII. 123.
 Lepidokrokite, mineral, XV. 108.
 Lepidoptera, order of insects, IX. 26, 203.
 Lepidopus, genus of fishes, XII. 294, 296.
 Lepidosiren, genus of fishes, XII. 318; XVII. 139—dental system of, XVI. 427.
 Lepidostei, family of fossil fishes, XII. 333.

LEP—LES

- Lepidosteidæ, family of fishes, XII. 317—fossil, XVII. 126.
 Lepidosteus, genus of fishes, XII. 316, 317, 209; XVII. 126, 128.
 Lepidotus, genus of fossil fishes, XII. 334.
 Lepidura prolongata, VII. 543.
 Lepidus, sedition of, XIX. 322 *et seq.*
 Lepileur (M.), on the Persian languages, XIII. 208.
 Lepipterus, genus of fishes, XII. 285.
 Lepisma, genus of insects, IX. 261.
 Lepismenæ, family of insects, IX. 260.
 Lepisoma, genus of fishes, XII. 277.
 Lepontine Alps, II. 623, 624.
 Leporidae, family of rodents, XVII. 632.
 Leporinus, genus of fishes, XII. 246.
 Leposternon, genus of reptiles, XIX. 40.
 Lepracanthus, fossil fishes, XVII. 117.
 LERPROST, XIII. 339—in Arabia, III. 354—in China, VI. 586—in Egypt, VIII. 423.
 Lepsius (Dr.), on hieroglyphics, XI. 376 *et seq.*—his work on Egypt, VIII. 502—his examination of the Labyrinth, 503—on the papyrus, XI. 370, n. 6—on the Egyptian "Book of the Dead," XVII. 263—on the affinity of the Egyptian, Semitic, and Indo-Germanic languages, 534.
 Leptacanthus, genus of fossil fishes, XII. 340; XVII. 117.
 Leptides, family of insects, IX. 232.
 Leptines, VI. 282; XI. 432.
 Leptis, genus of insects, IX. 232.
 Leptocephalidæ, family of fishes, XII. 229.
 Leptocephalus, genus of fishes, XII. 229—fossil, 347.
 Leptocera, genus of insects, IX. 145.
 Leptogaster, genus of insects, IX. 335.
 Leptoichthys, genus of fishes, XII. 315.
 Leptolæna, order of plants, V. 185.
 Leptolepis, genus of fossil fishes, XII. 336; XVII. 126, 127.
 Lepton, genus of mollusks, XV. 350.
 Leptonotus, genus of fishes, XII. 315.
 Leptopleuron, fossil reptile, XVII. 129, 130.
 Leptolepidæ, fossil fishes, XVII. 126.
 Leptopus, genus of insects, IX. 163.
 Leptorhinophis, genus of fishes, XII. 233.
 Leptosomus, genus of birds, XVI. 778.
 Leptura, genus of insects, IX. 146.
 Lepturetæ, family of insects, IX. 146.
 Leptus, genus of arachnides, III. 389.
 Lepus, genus of mammalia, XIV. 187.
 LERIDA, Spanish town, XIII. 341.
 LERINS, islands, XIII. 342.
 Lernanthrope, genus of entozoa, XXI. 982.
 Lerneopoda, genus of entozoa, XXI. 982.
 LEROS, or Lero, island, XIII. 342.
 Lerot, in zoology, XIV. 180—its hibernation, III. 180.
 LERWICK, in Shetland, XIII. 342; XX. 113, 114.
 Le Sage. See Sage (Le).
 Lesbias, genus of fossil fishes, XII. 347.
 LESBOS, island, XIII. 342; XV. 285—coins of, XVI. 375.
 Lesbros on hydrodynamics, XII. 75, 121, 149.
 Lescalier (M.), on preserving timber, XVI. 99.
 Lesghians, VI. 342—language of, XIII. 216.
 LESINA, island, XIII. 342.
 Lesko, Prince of Poland, XVIII. 137, 140, 141.
 LESLEY (John), bishop, XIII. 342.
 LESLIE (Charles), XIII. 343—his rules for testing the genuineness of alleged miracles, XV. 266.
 — (General), V. 395, 405 *et seq.*
 — (Sir John), XIII. 344—his Dissertation on the progress of mathematical and physical science, I. 689—his early studies, 942—his essays on mathematics and electricity, 942, 943—travels, 943—his essay on heat, 943, 944; XI. 263—his differential thermometer, 944 (see Thermometer)—his minor writings, 945—his philosophical character, *ib.*—merits of his experimental researches, 946—part of the article Acoustics, in this work by, II. 100—on sound, 101,

LES—LEU

- 105—on the speaking-trumpet, 107—on Indian algebra, 488—on the moon's light, IV. 41—his atmometer, 177—on solar heat, VI. 2—on capillary action, 200—his photometer, 781; XIII. 455—on the cold produced by evaporation, VII. 102—his method of artificial congelation, 104, 105; XI. 271; I. 945—on dew, VII. 767, 768—on heat, I. 942; XI. 263, 264 *et seq.*—on the supply of water to Rome, &c., XII. 10, n. 1—on the effect of waves, XI. 218—his treatise on curve lines, VII. 251—on one of the causes of decrease of temperature on ascending into the atmosphere, XIV. 640—his photometer, XVIII. 555—list of articles contributed to this work by, XIII. 346; I. 975—on polar temperatures, XVIII. 177.
 LESLIE, town in Fifeshire, XIII. 346.
 Lesmahagow gas coal, VII. 118.
 Lesparre, in France, X. 632.
 Lespinasse, his hydraulic experiments, XII. 112, 117.
 Lesseps (M. F. de), his proposed canal across the isthmus of Suez, XX. 789.
 LESSING (G. Ephraim), XIII. 346; XVII. 524; XIX. 718—as a dramatist, VIII. 167—poetry of, XVIII. 119.
 Lesson (M.), on birds, XVI. 732, 766.
 Lesteva, genus of insects, IX. 104.
 L'ESTRANGE (Sir Roger), XIII. 348; XVI. 182.
 Lestris, genus of birds, XVI. 813.
 Lesueur, blind man, IV. 780.
 — on the mollusca, XV. 327.
 Letheby (Dr.), on peat fuel, XVII. 358.
 Lethrinus, genus of fishes, XII. 187.
 Lethrus, genus of insects, IX. 120.
 Letronne (M.), on the vocal Memnon, XIV. 492.
 — on ancient Greek painting, XVII. 52 and n. 5.
 Letter locks, XIII. 536.
 Letters, classes and forms of, as used in printing, IV. 707—encouragement given to, in China, VI. 576.
 — of administration, duties on, XXI. 66.
 — postal arrangements for the transmission of. See Post-office.
 — practice of opening, at the post-office, XVIII. 405 *et seq.*
 — revival of, I. 14; VII. 535.
 LETTERKENNY, in Donegal, XIII. 348; VIII. 103.
 Letterpress printing, XVIII. 520.
 Letter-writing, XVIII. 327—Walpole's letters, XXI. 693, 694.
 Lettic, or Lettish language, IX. 392; XIII. 215.
 Lettou (John), printer, XVIII. 537; XXI. 401.
 Lettres de Cachet, X. 43, 47.
 Lettsom's method of taking casts from medals, VI. 325.
 Lettuce, V. 197; IX. 761—culture of, XI. 743—as food for silk-worms, XX. 291.
 — water, V. 214.
 LEUCA (Capo di), XIII. 348.
 LEUCADIA, island, XIII. 348; XII. 452.
 Leuchtenbergite, mineral, XV. 78.
 Leuchtenburg, Duke of, IV. 607; XVIII. 390—his galvanoplastic establishment, XXI. 636.
 LEUCIPPUS, philosopher, XIII. 348.
 Leuciscus, genus of fishes, XII. 356, 357—fossil, 346.
 Leucite, mineral, XV. 74—rock, 133.
 Leucocythemia, XVII. 661.
 Leucophane, mineral, XV. 88.
 Leucopha, animalcules, III. 202.
 Lencopis, genus of insects, IX. 257.
 Leucopyrite, XV. 115.
 Leucothyreus, genus of insects, IX. 124.
 LEUCTRA, in Boeotia, XIII. 349—battle of, III. 628; XX. 502; XXI. 177.
 Leucus, VII. 494.
 LEUK, Swiss village, XIII. 349.
 Leupold, his fire-escape, XIII. 438—on bridges, VI. 383—his water-pumping steam-engine, XX. 575, 576.
 LEUSDEN (John), XIII. 349.

LEU—LEY

- Leuthen, battle of, XXI. 714.
 Leutke (Capt.), his scientific voyage, IX. 573—his pendulum observations, *ib.*, 574.
 LEUTSCHAU, Hungarian town, XIII. 349.
 LEUWENHOECK (Anthony van), XIII. 349—on anatomy, II. 763; IX. 3—on the brain, 820, 821—on the muscles, *ib.*—his microscopic discoveries, III. 197—on ants, 261—on spiders' threads, 376—on the wing scales of the silk-moth, XIV. 802—on the structure of teeth, XVI. 409.
 LEUZE, town in Belgium, XIII. 349.
 LEVANT, XIII. 349; XIV. 469—trade of England with the, VIII. 732—plague of the, XVII. 748.
 — Company, XII. 818.
 LEVANTE, Sardinian province, XIII. 349; X. 452.
 LEVANTO, XIII. 349.
 LEVEE, XIII. 349.
 LEVEL and Levelling, XIII. 349—in mining, XV. 224. See Surveying.
 Levellers, V. 410; XII. 495.
 LEVEN, in Fifeshire, XIII. 349.
 — (Lord), V. 404.
 — (Loch), between Argyll and Inverness shires, XIII. 350.
 — (Loch), in Kinross-shire, XIII. 350, 94; XIX. 792—its trout, XIII. 94; XII. 242.
 — river, in Fifeshire, XIII. 94.
 — river, in Dumbartonshire, VIII. 235; XIII. 657.
 Lever, XIV. 388; XX. 541—new property of, discovered by Æpinus, II. 164—saying of Archimedes as to the power of, III. 430.
 — escapement, VII. 32.
 Leverrier (M.), his early investigations, I. 829—his prediction of the place and orbit of Neptune from the motions of Uranus, 827, 829; IV. 93—preceded by Mr Adams in this investigation, I. 830—on the perturbations of Uranus, IV. 93—on the motions of Mercury, IV. 89, 90—his other researches, I. 832.
 Levin (Rahel), XXI. 524.
 LEVITES, XIII. 350; I. 488.
 LEVITICUS, XIII. 351.
 Levyne, mineral, XV. 76.
 Lewenhaupt (General), XIX. 479, 480.
 LEWES, in Sussex, XIII. 351; XX. 838, 839—battle of, 840.
 — (G. H.), on the applications of phrenology, XVII. 565.
 Lewin (J. William), his work on the lepidoptera of New South Wales, IX. 11.
 — (William), his works on insects, IX. 8, 11.
 Lewis (Dr.), his method of taking casts from medals, VI. 325—on gilding, X. 626.
 — (F. H.), his design for the Panopticon, III. 506.
 — (General), his tabular view of the subjects of artillery, III. 680—on howitzers, 700.
 — (Sir George Cornwall), on the early history of Rome, XVI. 261; XIX. 300, 301—on the Pelasgi, XVII. 371—as a philologist, 525.
 — (MATHEW GREGORY), novelist, XIII. 353—his romances, XIX. 277.
 — (Mr), American mesmerist, XX. 441.
 — (Mr), his method of making ink, XII. 382.
 — island, XIII. 351.
 LEXICON, XIII. 353. See Dictionary.
 Lexicography, XVII. 526.
 Lexington, skirmish at, V. 481.
 — in Kentucky, XIII. 373, 70.
 LEYDEN, city of Holland, XIII. 353—papyrus at, XI. 377—university of, 590; XXI. 492—university library, XIII. 422; XI. 589—museum, *ib.*—population, 582.
 — Jar, I. 737; VIII. 526, 611, 612, 613; XXI. 95 and n., 4.
 — (JOHN), XIII. 353—on the Asiatic languages, 205 *et seq.*—on Borneo, V.

LEY—LIC

- 47—his connection with the Scots Magazine, VII. 299.
 LEYDEN (Lucas von), painter, XVII. 74.
 Leydolt (Prof.), on nature-printing, XVIII. 555.
 LEYTE, island, XIII. 355.
 Leyzin, in Switzerland, mortality and births in, XVIII. 349, 350.
 LHUYD (Edward), antiquary, XIII. 355.
 — (Humphrey), his attack on Boyce, V. 254.
 Liability, limited and unlimited, XVII. 313—limited, 316—evils of, *ib.*, 319, 322—facilities it gives for swindling, 320—application of, to banking, 323; its disadvantages, XV. 452—unlimited, XVII. 316.
 Lias, XV. 207—in Scotland, XIX. 793—flora of, V. 236; XVII. 641—fishes of, XII. 348, 350, 352; XVII. 117, 125, 126, 140.
 Liautaud (Dr), on the tea-plant in Brazil, XXI. 81.
 LIBANIUS, rhetorician, XIII. 355.
 LIBANUS, or Lebanon, XIII. 355. See Syria.
 LIBAU, Russian seaport, XIII. 355.
 LIBEL, XIII. 355—law of, V. 472—in church courts, IX. 480.
 LIBELLULA, genus of insects, IX. 175, 176—lives after decapitation, III. 177.
 Liber, or inner bark, V. 82.
 LIBERIA, XIII. 359; II. 227, 709.
 LIBERIUS, bishop, XIII. 360.
 Libertini, Roman, XIX. 317.
 Liberty, political, XIII. 260; Barbour's encomium on, IV. 435—natural, XIII. 261—civil, *ib.*—opposition of civil and political, 268—promoted by the Crusades, VII. 532; and by commerce, IX. 395—economists on, VIII. 377—religious, not accorded in ancient Greece, XX. 381.
 — OF THE PRESS, XIII. 360, 357—Hall's apology for, XI. 192—French laws relative to, X. 179, 180, 184.
 Libes (M.), on electricity produced by pressure, VIII. 563.
 Libethenite, mineral, XV. 103.
 LIBOURNE, in France, XIII. 373; X. 632—roof of the riding-house at, XIX. 394.
 Libra, XIII. 373.
 LIBRARIES, XIII. 373—history of, 380—British, 389—foreign, 406—American and Colonial, 428—statistical view of the principal libraries, 432, *et seq.*—Alexandrian, II. 469—Ambrosian, in Milan, XIV. 95; XV. 3—in Berlin, IV. 667—Constantinople, XXI. 383—Copenhagen, VII. 347—Dresden, VIII. 177—Dublin, 225—Edinburgh, 395, 399—Florence, IX. 666—Germany, X. 592—Gibraltar, 620—Glasgow, 653—Italian, XII. 661—Lambeth palace library, XIII, 669—Lisbon, 506—Liverpool, 521—London, 674—Madrid, 805—free libraries in Manchester and Salford, XIV. 259—Modena, XV. 296—Munich, 679—New York, XVI. 221, 230—Padua, XVII. 42—Rome, XIX. 369—Santiago, VI. 546—free library at Sheffield, XX. 97—of the United States, XXI. 424—at Vienna, 583—classification of books in, IV. 715—Samuel Brown's itinerant libraries, XI. 176—libraries entitled to receive a copy of every published book, VII. 357, 358.
 Libration of the moon, I. 813; IV. 39—discovered by Galileo, III. 801—Lagrange on, I. 813; III. 811; XIII. 152, 156.
 Libri (M.), on the effect of electricity on odoriferous bodies, VIII. 599.
 LIBURNI and Liburnia, XIII. 435.
 LIBYA, or Libia, XIII. 435, 743; II. 211—invaded by Agathocles, VI. 285—Libyan war, VI. 290—coins of, XVI. 380.
 Libythia, genus of insects, IX. 208.
 Lice, IX. 261—bird-lice, 262—whale-lice, VII. 542—wood-lice, 543—destruction of, XXI. 549—on the domestic animals, 579.
 LICENSE, of Excise, XIII. 435—license duties for different modes of fishing in

LIC—LIF

- Ireland, IX. 623, *n.*—license duties as a tax, XXI. 69.
 Licensor of books, VI. 370; IV. 722.
 Licetus (Prof.), on the moon's light, IV. 41.
 —his work *De Monstris*, XIV. 423.
 Lichenes or Lichens, nat. order of plants, V. 217—reproductive organs of, V. 146—used in dyeing, VIII. 273, 285; XIII. 515—orchilla weed, XVI. 700—reindeers, XIII. 235.
 Lichenin, V. 72.
 LICHFIELD, XIII. 436—cathedral, XX. 531.
 —(Lord), on the penny postage system, XVIII. 411.
 Lichia, genus of fishes, XII. 297—fossil, 345.
 LICHTENBERG (G. C.), XIII. 436.
 —German principality, XIII. 436.
 Lichtenberg's electrical figures, VIII. 606.
 Lichtenberger (Prof.), on the origin of printing, IV. 707.
 Lichtenstein (A. A. H.), his work on the genus mantis, IX. 11—on the giraffe, XIV. 209.
 Licinian law, XIX. 303.
 Licinianus (Caius Granus), discovery of his annals, XVII. 215.
 LICINIUS, Emperor, XIX. 352.
 —(Stolo) XIII. 436.
 Licinus, genus of insects, IX. 148.
 Licosa, headland, XX. 241.
 LICTOR, XIII. 436; IX. 486.
 Liddel, river, VII. 576; XIX. 453, 790.
 Liddell and Scott (Messrs), their lexicon, XVII. 526.
 —(Dr), on the History of Rome, XIX. 301.
 Lidner, Swedish author, XIX. 699.
 Lie, does necessity justify a? XV. 572.
 Lieber (Thomas). See Erastus.
 Lieberkuhn on the villi of the ileum, III. 60, 61—his solar microscope, XIV. 789.
 Liebig, on agricultural chemistry, II. 374—on the fermentation of Bavarian beer, V. 335, 336—on the ingredients of the soil necessary for the growth of plants, 172—on the potato disease, *ib.*—his chemical school at Giessen, X. 621—on animal heat, XVII. 665—his mode of silvering glass specula, XXI. 132.
 LIECHTENSTEIN, German state, XIII. 436.
 Liège, province in Belgium, XIII. 436; IV. 613, 615.
 —town, XIII. 436—taken by Marlborough in 1702, V. 447—university of, IV. 620; XXI. 492—library of, IV. 623; XIII. 423—manufactory of fire-arms at, IV. 623.
 LIEGNITZ, in Silesia, XIII. 437; XX. 275.
 Lier (C.), his work on the insects of France, IX. 15.
 LIERRE, or Lier, town in Belgium, XIII. 437—normal and military schools at, IV. 621, 622.
 Liesganig, his measures of a meridional degree, IX. 550.
 Lieutaud (Joseph), anatomist, II. 765.
 LIEUTENANT, XIII. 437; III. 665—naval, XVI. 104—prices of commission, rates of pay, &c., VII. 202, 203.
 Liéville, mineral, XV. 90.
 Life, II. 747—tenacity of, among insects and other animals, III. 176—instances of supposed confusion of animal and vegetable life in animalcules, 200, 204, 206, *n.* 2—length of, in the antediluvians, 267; in modern times, XIV. 425, see Longevity—Aristotle on, III. 548—expectation of, XV. 647; XVIII. 351, 353, 355—doctrine of, XVII. 648—properties of living beings, 655—physical and vital phenomena, *ib.*—average duration of lives, XVIII. 588, 589—human life compared to a river, XIX. 179—agents influencing, 607—life seemingly restored by galvanism, XXI. 634.
 Life-boat, XIII. 445—Journal, 447.
 —Institution (National), XIII. 445 and *n.*—its life-boat, 446.
 LIFE-GUARDS, XIII. 437; III. 665; XI. 74; VII. 202.
 LIFE-PRESERVERS, XIII. 437.
 Life-rafts, XIII. 439.

LIF—LIL

- Life Assurance, III. 224, 239; XII. 394—tables, 415, 416—offices, 404—in London, XIII. 665. See Annuities, Insurance.
 Liffey, river, VIII. 215; XII. 505; XIII. 81.
 Lifford, in Donegal, VIII. 103.
 Lifting pump, XII. 177.
 Ligaments, structure and properties of, II. 823; XVII. 652—yellow or elastic, II. 824; III. 5—in bivalve shells, XV. 342.
 Ligan, IX. 668.
 Ligature, XX. 822 *et seq.*
 LIGHT, XIII. 449; XVI. 531 *et seq.*—Aristotle's definition of, I. 621—undulatory theory of, 801, 895, 896, 903, 909; progress of, since Fresnel, 917—interference of light, 897 (see Interference)—Fresnel's discoveries regarding, 809; X. 306, 307—retardation of, in dense media, I. 910—theory of dispersion of, 920—non-dispersion in free space, 921—chemical action of, *ib.*—aberration of, II. 35; III. 804; IV. 21—its effects upon plants, V. 220—zodiacal, IV. 13—of the moon, 41; discovery of heat in, XIV. 485—nature of, VI. 657—amount of solar light received by the earth, 775, 776—colours of deflected and diffracted light, 650, 651—electrical, VIII. 546, 547, 548—its influence on health, XIX. 608—alternately attracted and repelled by bodies, XX. 752—produced by voltaic electricity, XXI. 626, 637—instantaneous light apparatus, 630—white light, XI. 272—light and shade in drawing, VIII. 173. See Aurora Borealis, Chromatics, Colour, Optics, Phosphorescence, Polarisation, &c.
 LIGHTFOOT (John), English theologian, XIII. 482.
 LIGHTHOUSES, XIII. 463—principles of optics applied to the improvement of, I. 753—Fresnel's system of illuminating, 906; X. 307—introduced into Scotland, I. 907—on the Isle of May, XIV. 367—Eddystone, III. 491; XX. 335—in the Firth of Forth, IX. 795—of Cantyre, XIII. 95—at Corunna, X. 372—in the Mauritius, XIV. 363—R. Stevenson's improvements in, XX. 695—on the Chapman sands, 723.
 Lightning, XIV. 662—identical with electricity, I. 735; VI. 345; VIII. 527, 582—rapidity of, II. 107—Stephen Gray on, VIII. 526—transport of ponderable substances by, 584—sheet or summer lightning, 587; XIV. 683—effects produced by, VIII. 585—on compass needles, 600—on animal bodies, 601—death from, XIV. 431—its destructive effects, 662—meteorolites not produced by, 633—conductors of, VIII. 609—for ships, 610; XX. 24—imitation of, XVIII. 706.
 Ligne (Prince de), his Life of Prince Eugene, IX. 367, *n.*
 Lignin, V. 72.
 Lignite, XV. 123, 149; XVII. 641—of Armagh, III. 614—Prussia, XVIII. 668.
 Lignum-vitæ, XXI. 278—specific gravity of, XII. 89—in Honduras, XI. 612—use of, for the bearings of the screw-shaft in steam-vessels, XX. 655.
 Ligny, battle of, V. 619; XVIII. 657.
 LIGOR, in Siam, XIII. 483.
 Ligula, genus of entozoa, XXI. 979.
 Ligure, in botany, V. 92.
 LIGURIA, in Italy, XIII. 483.
 LIMFIORD, in Jutland, XIII. 483.
 Lilac, flowering shrub, XVII. 764.
 Lilac-colour, dyeing of, VIII. 311, 319.
 LILBURNE (John), XIII. 483.
 Liliaceæ, nat. order of plants, V. 212.
 Lilius (Aloysius), reform of the calendar by, VI. 82, 83.
 LILLE, or Lisle, XIII. 483—defence of, by Bouffiers, V. 242; IX. 369—siege of, X. 70—population, 277.
 —lace, XIII. 142.
 LILLEBONNE, town in France, XIII. 484.
 LILLO (George), XIII. 484—dramatic works of, VIII. 164, 165; XVIII. 96.

LIL—LIM

- LILLY (John), poet, XIII. 484; XXI. 166.
 —(WILLIAM), astrologer, XIII. 484—his account of Brigg's visit to Baron Napier, XV. 777.
 —(William), grammarian, VIII. 796.
 Lily, culture of, XI. 752.
 —order of plants, V. 212.
 Lily-encrinite, XVII. 98.
 LILYBÆUM, XIII. 485; XX. 245—besieged by the Romans, VI. 290.
 LILYE, or Lily (William), grammarian, XIII. 485.
 LIMA, XIII. 485; XVII. 465, 474—temperature of, II. 673—Bolívar's expedition to, IV. 818.
 —genus of mollusks, XV. 348, 347—fossil, XVII. 106.
 Limacidae, family of mollusks, XV. 374.
 Limacina, genus of mollusks, XV. 361.
 Limacodes, genus of insects, IX. 214.
 Limamurana, genus of fishes, XII. 231.
 Limanobia, fossil mollusks, XVII. 105.
 Limapontia, genus of mollusks, XV. 370.
 Limax, genus of mollusks, XV. 374.
 Limbelite, mineral, XV. 89.
 Limber-strake of a ship, XX. 187.
 Limbs, power of throwing off and restoring, in the crustacea, VII. 538.
 LIMBORCH (Philip Van), XIII. 486—on theology, XXI. 204 *et seq.*
 LIMBURG, XIII. 486.
 Limburg-Brouwer, on ancient mysteries, XV. 754.
 LIME, XIII. 487; XV. 65—its use as a manure, II. 302, 414—Dr Black on the causticity of, IV. 738—crystallised and stalactitic carbonates of, VI. 68—chemical properties of, 487—its use as mortar, V. 731; XX. 713—in purifying gas, X. 416—in the manufacture of sugar, XX. 792, 797—sulphate and phosphate of, as manures, II. 304, 415—in plants, 388; V. 97—its beneficial effects against "fingers and toes," II. 319—phosphorescent effects of electricity on calcareous substances, VIII. 599—its poisonous property, XIV. 434—carbonate of, VI. 472, 487. See Iceland spar, Limestone, Marble.
 LIMERICK, Irish county, XIII. 487—agricultural statistics, XII. 515, 517—golden vale of, X. 388.
 —city, XIII. 488—siege of, in 1691, V. 443; XII. 490—treaty of, 491; V. 443.
 —lace, XIII. 142.
 Limestone, II. 391; XV. 92, 146—different kinds of, 147, 148—fresh-water, 144, 147—joints in, 164—specific gravity of, XII. 88—marine, XV. 143—altered or crystalline, 153—carboniferous, 202, 203—hippurite limestone, XIII. 508; XVII. 107—of Derbyshire, VII. 755—Devonshire, 763—Edinburghshire, VIII. 409—as building-stone, XX. 712—formations of, liable to be hollowed into caverns, XVII. 601—mortar made from, XX. 713—kinds composed of fossil foraminifera, XXI. 1007. See the Geological Section of different countries.
 Lime-tree, V. 113, 185; XVII. 759, 761—its use in joinery, XII. 817—as a timber-tree, XXI. 278.
 —fruit, V. 186; XI. 729.
 —juice, XIII. 331.
 Limigantes, VII. 306, 307.
 LIMITED LIABILITY, XIII. 489; XII. 819.
 Limitrophic organs, III. 3, 59.
 Limnanthaceæ, nat. order of plants, V. 188.
 Limnea, genus of mollusks, XV. 374—fossil, XVII. 111.
 Limnebius, genus of insects, IX. 117.
 Limnæidæ, family of mollusks, XV. 374.
 Limnophilus, flies used as bait, III. 149.
 Limnobia, genus of insects, IX. 226.
 Limnochares, genus of arachnides, III. 389.
 Limnoria terebrans, XI. 224; VII. 542.
 LIMOGES, town in France, XIII. 489—population, X. 277.
 Limon Bay, XVI. 121.
 Limonite, mineral, XV. 108.
 Limopis, genus of mollusks, XV. 349—fossil, XVII. 106.

LIM—LIN

- Limosia, genus of birds, XVI. 803.
 LIMOUSIN, in France, XIII. 489; X. 277.
 LIMOUX, town in France, XIII. 489.
 Limpet, XV. 379—key-hole limpet, 380—bonnet and slipper limpets, *ib.*
 Limpopo, African river, II. 214.
 Linaceæ, nat. order of plants, V. 187.
 LINACRE (Thomas), physician, XIII. 489—founder of the College of Physicians of London, XIV. 459, 460.
 Linant (M.), on the volume of water in the Nile, VIII. 426—on lake Moëris, 503.
 Linari (Prof.), on thermo-electricity, XXI. 653.
 Linaria, genus of birds, XVI. 761.
 LINARES, town in Spain, XIII. 490.
 Linarite, mineral, XV. 105.
 Lincel, academy of, II. 63.
 Linckius on marine worms, XXI. 991, *n.* 2.
 LINCOLN, XIII. 490—cathedral of, III. 482, 516; XX. 733.
 —College, Oxford, XXI. 459.
 Lincoln's Inn, XII. 384; XIII. 672—library of, 394.
 LINCOLNSHIRE, XIII. 490—sheep, II. 345—improvement in its agriculture, VII. 391—canals, XVI. 54—duck-catching in, 818—embankments in, VIII. 643, 647—population and value of property, 754.
 Lind (Dr James), his anemometer, XVIII. 65.
 —(Jenny), songs written for, by Mendelssohn, XIV. 496.
 LINDAU, in Bavaria, XIII. 493.
 Linde (S. Gottlieb), his Polish lexicon, XVII. 529.
 Linden, order of plants, V. 185.
 Lindenau's astronomical publications, III. 813, 814.
 Lindisfarne, XI. 593; XVI. 299.
 Lindley (Dr), his classification of plants, V. 179—on the propagation of plants, XI. 693—on horticulture, 693 *et seq.*
 —(George), on horticulture, XI. 708, 713, 715.
 LINDO, XIII. 494.
 Lindsay (Sir A. Bethune), XVII. 422.
 —(Sir David), XIII. 493; VI. 191—Chalmers's edition of, VII. 402—his satire of the Three Estates, XIII. 144.
 —of Pitscottie, his account of the escape of James V., XIX. 770.
 —(Dr), on the character of Wakefield, XXI. 682.
 —(W. Lauder), on the dyeing properties of lichens, VIII. 286.
 LINDSEY (Rev. Theophilus), XIII. 493.
 LINDUS, town in Rhodes, XIII. 494.
 Line, in geometry, X. 506, 507—straight line, 507, 551; properties of, 556—lines in fortification, IX. 809—in heraldry, XI. 325—lines of the spectrum, I. 915—of operation in war, XXI. 704—line of battle, 720.
 —arrangement of volcanoes, XXI. 604.
 Linear engraving, VIII. 805.
 LINEN, XIII. 494—bleaching of, IV. 768—its loss of weight in bleaching, 769—calendering of, VI. 92—dyes worse than silk and wool, VIII. 274—method of dyeing it red, 292; yellow, 299; blue, 303; black, 306; green, 310; violet, 312; orange, 313; mixtures of black, &c., 314—imports and exports of, 734, 736—exports, 730—ink for marking, XII. 384—means of removing ink-spots from, XIII. 331—its use in paper-making, XVII. 251, 252.
 Linen-manufacture, XIII. 495—of Antrim, III. 268; Armagh, 614; Dundee, VIII. 258; Dunfermline, 259; England, 729; Fife, IX. 545; France, X. 253; Germany, 590; Donegal, VIII. 106—Ireland, XII. 519—Coleraine, VII. 109—Forfar, IX. 784—Holland, XI. 583—Kirkcaldy, XIII. 98—Paisley, XVII. 89—Scotland, XIX. 805—Sligo, XX. 331—Tipperary, XXI. 287—Tyrone, 408—Wurtemberg, 938.
 Ling, as food, IX. 764.

LIN—LIP

- Ling, fisheries of, in Britain, IX. 648—in Ireland, 634—Scotland, XIX. 804.
— (H. P.), Swedish poet, XIX. 700.
Linga, one of the Shetland islands, XX. 113.
Lingam, V. 267.
LINGARD (Rev. John, D.D.), XIII. 496—on the character of Cromwell, V. 418—on the Restoration, 420—on the great plague in London, 424—on an incident in King Edgar's history, VIII. 660, *n.*—on the massacre of St Bartholomew, X. 33, *n.*—on the influence of Wycliff's biblical labours, XXI. 946.
LINGEN, island, XIII. 496.
Lingual bone, in man, III. 26.
Lingula, genus of mollusks, XV. 339, 337—fossil, XVII. 105.
— flags, XV. 196; XVII. 105.
Lingulidæ, family of mollusks, XV. 339.
Link motion, XIV. 401.
LINKÖPING, in Sweden, XIII. 496.
LINKÖPINGS LAN, XIII. 496.
Links' experiments on capillarity, XII. 101.
Linkwork, in mechanics, XIV. 398, 400.
LINLITHGOW, XIII. 496.
LINLITHGOWSHIRE, XIII. 497—agricultural statistics, XIX. 796, 797, 798—population, 799—corn-measures of, XXI. 809.
Linnæan Society of London, XIX. 368—founded by Sir J. E. Smith, XX. 346.
LINNÆUS (Sir Charles), XIII. 498—his classification of animals, III. 182, 184; of plants, V. 177; of the mammalia, XIV. 126; of birds, XVI. 726—his definition of the three kingdoms of nature, III. 169—his entomological system, IX. 4—on ants, III. 261; the crustacea, VII. 540; fishes, XII. 205—on the sexes of plants, V. 152—on the colours of plants, VII. 158—his *Systema Naturæ*, XIV. 126 and *n.* 1—his museum purchased by Sir J. E. Smith, XX. 346—on the manufacture of sal-ammoniac, II. 721—on zoophytes, XXI. 973 *et seq.*—his description of himself, XIV. 126.
Linneite, mineral, XV. 116.
Linnets, XVI. 761.
LINNHE (Loch), XIII. 501; XIX. 795.
Linois (Admiral), V. 598, 601.
Linseed oil, XVI. 494.
LINT, XIII. 501. See Hemp, Linen, Weaving.
Linth, Swiss river, XX. 888.
Linton Bridge, on North British Railway, XVIII. 762, 763.
LIN-TSING, town in China, XIII. 501.
LINUS, XIII. 501.
— (Father), his opposition to Pascal, IV. 451.
Linyphia, genus of arachnides, III. 380.
Linz, or Lintz, Austrian city, XIII. 501.
Lion, XIV. 169; XVII. 632—of Africa, II. 217—in Persia, XVII. 423—of Asia, III. 739—Hindustan, XI. 455 and *n.* 2—dentition of, XVI. 459, 460—chemical composition of the teeth of, 418—less courageous than the dog, XX. 219—lion-shooting, 211—fossil, XVI. 172.
— in heraldry, XI. 332.
Lion-ant, IX. 178.
Lioncels, in heraldry, XI. 332.
Liorhynchus, genus of entozoa, XXI. 980.
Lipara, genus of insects, IX. 254.
LIPARI ISLANDS, XIII. 502; XX. 246.
Liparis, genus of fishes, XII. 307.
Liparites, VII. 314.
Liparus, genus of insects, IX. 139.
Lipenius, biographical dictionaries of, IV. 714.
LIPETSK, Russian town, XIII. 502.
LIPPA, Hungarian town, XIII. 502.
LIPPE-DETMOLD, German principality, XIII. 502.
LIPPE-SCHAUMBURG, XIII. 503.
Lippersheim (John), the alleged inventor of the telescope, XVI. 527; XXI. 133.
LIPPI (Filippo), painter, XIII. 503.
— (FRA FILIPPO), painter, XIII. 503.
— (LORENZO), painter, XIII. 504.
— (Prof.), of Florence, on the lymphatics, II. 804.

LIP—LIT

- LIPPSTADT, Prussian town, XIII. 504.
Lips, muscles of the, III. 39—atomy of the, 47.
LIPSUS (Justus), XIII. 504; VI. 738—on crosses, VII. 518.
LIQUATION, or eliquation, XIII. 504.
Liquefaction, XI. 269.
Liqueurs, IX. 760.
Liquid manures, II. 294.
— measures, XXI. 808.
Liquidambar, order of plants, V. 207.
— tree, XVII. 765.
Liquids, weight of, XIV. 417. See Fluids.
Liquor sanguinis, XVII. 664—exudation of, 690.
LIQUORICE, XIII. 505; V. 190.
Liri, river. See Garigliano.
LIRIA, town in Spain, XIII. 505.
Liroconite, mineral, XV. 103.
LISBON, XIII. 505—geographical academy of, II. 62—royal academy of, 67—earthquake at, X. 695; XVII. 582; XVIII. 386; XX. 94—manufactures, XVIII. 398—wine, 397; XXI. 885, 889, 890—French expedition to, in 1831, X. 205—newspapers, XVI. 203.
LISBURN, Irish town, XIII. 508.
Lisdownvarna, in Clare, chalybeate spring of, VI. 753.
LISIEUX, in France, XIII. 508.
LISKEARD, in Cornwall, XIII. 508—group of rocks, XV. 199.
LISLE (Joseph Nicholas de), XIII. 508.
— See Lille.
LISMORE, Irish town, XIII. 509—salmon fishery of, IX. 625.
— island, XIII. 509.
Lispe, genus of insects, IX. 250.
LISSA, Prussian town, XIII. 509.
— island, XIII. 509.
— genus of insects, IX. 252.
Lissonotus, genus of insects, IX. 144.
LISTER (T. Henry), novelist, XIII. 509.
— (J. Jackson), his improvements of the microscope, II. 768; XIV. 778.
— (Martin), his work on insects and arachnides, IX. 3—on the habits of spiders, III. 376.
Liston (Rev. Henry), his organ, XVI. 713.
— (Mr), on surgery and surgical instruments, XX. 820 *et seq.*
LISTOWEL, Irish town, XIII. 509.
Literary property; see Copyright—chronology, VI. 698—diseases of literary men, XIV. 442.
— history, in its relation to philology, XVII. 526.
Literature, an element in history, XI. 538—of Edinburgh, VIII. 403—Egypt, 447; XI. 426—London, XIII. 673—Germany, X. 593, 693—of the Hindus, XI. 477—illustrated by numismatics, XVI. 352—of Holland, XI. 590—Hungary, XII. 18—Italy, 660—China, VI. 576—organisation of, XIX. 107—data for theories of, 110—Russian, XIX. 546—Scandinavian, 689—of the United States, XXI. 424.
Litharge, VI. 497.
LITHGOW (William), traveller, XIII. 509.
Lithia, XV. 65—in tourmaline, 89.
Lithia-mica, XV. 78.
Lithium, VI. 486.
Lithobius, genus of myriapods, XV. 749.
Lithocardium, genus of mollusks, XV. 349—fossil, XVII. 107.
Lithodendron, fossil corals, XVII. 97.
Lithodomus, genus of mollusks, XV. 348.
Lithographic stone, XV. 92—printing, XVIII. 520.
LITHOGRAPHY, XIII. 510—chromo-lithography, XIV. 734; XIII. 513.
Lithology, XV. 129.
Lithomarge, mineral, XV. 84.
Lithophylliæ, polypes, XXI. 1005.
Lithophytes, XXI. 974, 1009.
Lithornis, genus of fossil birds, XVII. 155.
Lithosia, genus of insects, IX. 214.
Lithostrotion, fossil corals, XVII. 97.
Lithotomy, II. 766—ancient, XX. 811, 814—modern, 817, 818, 820—operation of, 830; on the horse, XXI. 570.

LIT—LIZ

- Lithotrity, XX. 830, 831—practised in ancient times, 811.
Lithoxylon, mineral, XV. 69.
LITHUANIA, XIII. 514—language of, 215; IX. 392.
Lithurgus, genus of insects, IX. 199.
Litke (Admiral), his survey of the coast of Russian Lapland, XIII. 242, 243.
Litorina, genus of mollusks, XV. 382.
Litorinidæ, family of mollusks, XV. 382—fossil, XVII. 110.
LITMUS, XIII. 515.
Litre, French liquid measure, X. 284.
Littil (Clement), XIII. 402.
Little Go, examination at Cambridge, XXI. 464.
— ROCK, town in Arkansas, XIII. 515.
— (Mr), on the produce of the Irish salmon fisheries, IX. 624.
— (W.), entomologist, IX. 18.
LITTLETON (Sir Thomas), XIII. 515.
Littrow (Prof.), on telescopes, XXI. 121, 124, 125.
Lituites, fossil mollusks, XVII. 112.
Lituola, fossil foraminifera, XVII. 93, 94.
LITURGY, XIII. 515—Coptic liturgies, VII. 350.
Live stock, II. 337—treatment of, under disease, 357—improvement of, by Bakewell, 263; IV. 377; XIII. 350—management of, II. 325, 340 *et seq.* See Cattle, Sheep, Pigs, &c.
Liver, III. 62—worms in the, 175; XXI. 974—excretion from, XVII. 665—in the crustacea, VII. 539—its diseases in the domestic animals, XXI. 569.
LIVERPOOL, XIII. 517—and Manchester Railway, I. 885; XVIII. 753; XIII. 179; XX. 682—benefits conferred on, by steam and railway conveyance, VII. 457—Dr Currie's residence in, 594—W. Brown's munificent gift to, XIII. 406—free library of, 405—docks of, VIII. 74—police statistics of, XVIII. 198—post-office statistics, 416—roof over the railway station at, XIX. 398; steam-engines at, XX. 607.
— in New Brunswick, XIII. 522.
— in Nova Scotia, XIII. 522.
— (C. JENKINSON), first earl of, XIII. 522.
— (R. B. JENKINSON), second earl of, XIII. 523; XVII. 363—a member of the ministry in 1806, V. 601—prime minister, 612—bill of pains and penalties against the queen presented by, 629—his commercial policy, *ib.*, 637—struck with apoplexy, 648—on seignorage of coining, VII. 75—his work on coins, XV. 429; quotation from, 436.
Liverwort, order of plants, V. 217, 145. See Hepaticæ.
LIVERY, XIII. 524.
Liverymen of London, XIII. 677, 526.
Livia, XIX. 334—genus of insects, IX. 171.
Livings in the English Church, VIII. 743. See Benefice.
Livingstone (Dr), his travels in Africa, II. 211—on the effects of missions on the natives of Africa, XV. 273—his notice of Tete, 670—discovery of Lake Ngami, X. 477; XVI. 240—on the Zambesi and its falls, XVII. 601, 608; XXI. 967.
LIVUS (Andronicus), comic poet, XIII. 527; VIII. 141—poetry of, XVIII. 104.
— (TITUS), XIII. 526—his Roman history, XVI. 258; XVII. 210—his character as a historian, VI. 739—on the embassy to consult the laws of Athens, *ib.*—alleged provincialisms in his style, XVII. 336.
LIVONIA, XIII. 527; XIX. 521—interest of money in, XII. 429—language of, XIII. 201, 215.
LIVORNO, or Leghorn, XIII. 528, 316.
Livre (French), XV. 434—its degradation, and average value at different periods, *ib.*
LIXURI, in Cephalonia, XIII. 528; XII. 453.
Lixus, genus of insects, IX. 140.
Liza, a fish of Venezuela, XXI. 536.

LIZ—LOC

- LIZARD POINT, XIII. 528; VII. 406.
Lizard's tail order of plants, V. 207.
Lizards, reptiles XIX. 27—their bones, III. 86 *et seq.*—teeth, XVI. 433; eyes XVII. 450.
Llama, XIV. 205; VIII. 387; II. 605; IV. 823; XVII. 473, 632.
LLANDEFF, Welsh city, XIII. 528.
LLANDEILO-FAWR, XIII. 528; VI. 53.
— flags, XV. 196.
LLANDOVERY, Welsh town, XIII. 528—rocks of, XV. 196, 198.
LLANELLY, XIII. 528; VI. 52, 53.
LLANFYLLIN, town in Wales, XIII. 529.
LLANGFENI, town in Wales, XIII. 529.
LLANGOLLEN, XIII. 529—vale of, VII. 735—aqueduct at, III. 338.
LLANIDLOES, Welsh town, XIII. 529; XV. 518.
Llanos of South America, II. 668—of Hayti, XI. 254—of Colombia, VII. 133—of Venezuela, XVI. 717; XXI. 536—of the Oronoco, XVII. 609; X. 795.
LLANRWST, Welsh town, XIII. 529.
LLANTRISANT, Welsh town, XIII. 529.
Llerena, town in Spain, XIII. 529.
Llewellyn (Mr), his oxymel photographic process, XVII. 549.
LORENTE (Don J. Antonio), Spanish historian, XIII. 529—on the Inquisition in Spain, XII. 390, 391.
LLOUGHOR, Welsh town, XIII. 530.
Lloyd (L.), on bear-shooting, XX. 211—on the capercaillie, 236—on retreats in war, XXI. 718.
— (Prof. of Dublin), on the theory of light, I. 918—other works of, *ib.*, 919—his magnetic instrument, 994—his exertions promoting magnetical expeditions, 995—on the moon's influence on the magnetic needle, XIV. 19—on the variation of the needle, 53, 57—his method of observing the dip, &c., 86—his theodolite magnetometer, *ib.*—his inclination instrument, 87—on optics, XVI. 546, 548, 549, 599 *et seq.*
— (WILLIAM), bishop, XIII. 530.
LLOYD'S ROOMS, Royal Exchange, London, XIII. 530—Glasgow, X. 654.
— Register of British and Foreign Shipping, XIII. 531; XX. 166—effects of, in ship-building, 204, 205—classification of timbers at, XXI. 277.
Lo (St), French town, XIII. 531.
Loach, angling for, III. 162.
Load of timber, XXI. 280.
Loadstone, or magnet, XIV. 1, 19—specific gravity of, XII. 88—armature of, 20—statue of Venus composed of, XIX. 844.
Loam, XV. 83, 142.
LOANDA, island, XIII. 531.
— (St PAUL DE), African city, XIII. 531.
LOANGO, XIII. 531; II. 227.
Loasaceæ, nat. order of plants, V. 192.
Lobatto (M.), on the mortality in Amsterdam, XV. 644.
Lobeau, island in the Danube, XXI. 586.
Lobeira (Vasco de), XIX. 265.
Lobeliaceæ, nat. order of plants, V. 189.
Lobipes, genus of birds, XVI. 805.
LOBO (Jerome), Jesuit, XIII. 531.
Lobocheilos, genus of fishes, XII. 257.
LOBOS, or Seal Islands, XIII. 531.
Lobotes, genus of fishes, XII. 278.
Lobster, VII. 541—circulating system of, XV. 356—fishery of, on the coasts of Ireland, IX. 634—as food, 765.
Locality, faculty of, XVII. 563.
LOCARNO, Swiss town, XIII. 532; XX. 882.
— lake of, XIII. 151. See Lago Maggiore.
LOCATELLI (Pietro), violinist, XIII. 532.
LOCATIO ET CONDUCTIO, XIII. 532.
Lochaber, XII. 438.
Locheia, seaport on the Red Sea, XVIII. 818.
LOCHGILPHEAD, XIII. 532; III. 527.
Lochleven, XIII. 94—trout of, *ib.*—Queen Mary in the castle of, XIX. 786.
LOCHMABEN, XIII. 532; VIII. 238.
LOCHWINNOCH, XIII. 532.
Lochy, river, XII. 439.

LOC—LOC

Lochy (Loch), XIX. 794.
 LOCK, XIII. 533—Bramah's, V. 273.
 — (MATTHEW), XIII. 532.
 — of canals, XVI. 54, 56; XIX. 222—
 of the Caledonian Canal, 55.
 — of guns, XI. 98.
 Lock-jaw, in animals, XXI. 576.
 LOCKE (John), XIII. 547—his division of
 the objects of knowledge, I. 8, 9—on
 trade as an object of liberal study, 49—
 on the distinction between mind and
 matter, 57—on primary and secondary
 qualities, 62—on the varieties of mind,
 76, n. 1—Warburton's opinion of his
 philosophy, 80, n. 2—his Essay on Hu-
 man Understanding, 100, 102 *et seq.*—
 biographical sketch of, 100, 101—his
 diligent study of metaphysical writings,
 103—his style, 104—reception of his
 Essay, *ib.*, 105, 106, 250, 251—its influ-
 ence on Crousaz, 106 and n. 4—diffusion
 of his principles in France, 108, 250—
 his constant appeals to reason, and sin-
 cerity of his inquiries after truth, the
 best antidote to the errors of some of
 his conclusions, 108—misapprehension
 of his doctrines, 109 *et seq.*—on ideas
 from sensation and reflection, 110, 112;
 XIV. 563, n. 1—his use of the word re-
 flection, I. 111, n. 253; XIV. 562, 577—re-
 presents sensation and reflection as dis-
 tinct sources of knowledge, I. 113—mis-
 apprehensions relating to his doctrine
 on the power of moral perception, and
 the immutability of moral distinctions,
 115—his disavowal of the conclusions
 sometimes drawn from his reasonings,
 117—Lord Shaftesbury's attack on, 118
 —his tracts on Education and the Con-
 duct of the Understanding, 118, 119, 121
 —his letter to Newton, 119, n.—defects
 of his intellectual character, 120, 121—
 his modesty, 122, n.—on the intercourse
 between mind and matter, 125, n.—his
 chief opponents in England, 253—his
 philosophy contrasted with the specu-
 lation of Leibnitz, 126—injustice done
 to him by Leibnitz, 255—on the scale
 of beings, 136, n.—on free-will, 143, n.
 —letter of his to Collins, 263—influence
 of his writings on education, 269—on
 the perception of colour and figure, 166,
 n.—on reason in matters of religion,
 516, n. 1—on innate ideas, 109 *et seq.*;
 XIV. 601—on the silver coinage, VII.
 79, 379—his common-place book, 204—
 Condillac's adoption of his doctrines,
 234—on the power of truth, XIII. 368—
 on supplies of iron, XIV. 276—on in-
 sanity, 526—on trifling propositions, 593
 —on metaphysics, 552 *et seq.*—Mill's
 views on mental phenomena compared
 with his, XV. 12—a reformer in educa-
 tion, 809—on diversity of opinion as to
 what constitutes right and wrong, 541—
 on genera and species, XVI. 736—his
 tracts on Money, XVIII. 218—on the
 source of wealth, 225—on the incidence
 of taxes, XXI. 40—his definition of wit,
 894.
 — (Dr), his thermo-scopical galvanome-
 ter, XXI. 654.
 — (Joseph), on railways, XVIII. 794,
 795.
 Locke's History of Navigation, extract
 from, XX. 118.
 LOCKERBY, XIII. 549; VIII. 238—fair at,
 IX. 468.
 LOCKHART (John Gibson), XIII. 548—his
 Life of Burns, VI. 20—his novels, XIX.
 282—on Sir Walter Scott, 820, 821.
 — of Carnwath on the character of
 Fletcher of Saltoun, IX. 661.
 LOCKPORT, town in United States of Ame-
 rica, XIII. 549.
 LOCLE (Le), Swiss village, XIII. 549.
 Locomotion, organs of, III. 3, 4, 37. See
 Muscles.
 Locomotive engines, I. 881, 882; XVIII.
 779; XX. 614—improvements in, by G.
 Stephenson, I. 883—adapted by him to
 railways, 884—competition of, in 1829, at
 Ralnhill, 885—theory of, 886—speed of,

LOC—LOL

885; XVIII. 793—expense of, 791—
 mileage run by, 784—stations for, 774
et seq.—prevention of smoke in, XX.
 358—application of valve-gear to, 584.
 See Stephenson (George and Robert).
 Locomotive faculty, XIV. 568.
 LOCRI, ancient town, XIII. 549—Grecian
 tribes, *ib.* 550.
 LOCRI, XIII. 549—coins of, XVI. 370.
 Loculaments (loculi), in botany, V. 131.
 Locupletes, III. 776.
 Locust, IX. 159; XVII. 637—locusts in
 Abyssinia, II. 55—Africa, 218—Arabia,
 III. 347—Asia, 741—the Canaries, VI.
 163—India, XI. 457—Egypt, VIII. 433;
 XXI. 549—Syria, *ib.*—people who feed
 on, II. 115—their tenacity of life, III.
 176—sometimes found in England,
 XVII. 637.
 — tree, XVII. 759, 762.
 Locusta, genus of insects, IX. 158.
 Locustæ, in botany, V. 115.
 Lodes, in geology, XV. 177, 193, 219, 220.
 See Veins, Mineral.
 LODÈVE, town in France, XIII. 550.
 LODGE (Thomas), XIII. 550.
 Lodging-houses, in London, XIII. 664;
 XIX. 604—Lodging-House Acts, *ib.*
 LODI, in Lombardy, XIII. 550—battle of,
 X. 100; XV. 786.
 Lodwic (Mons.), his plan of a universal
 alphabet, VI. 417.
 Loeschman's patent organ, XVI. 713.
 Loew (H.), his works on insects, IX. 24.
 LOFODEN ISLANDS, XIII. 550—fishery of,
 XVI. 327.
 LOG (ship's), XIII. 551; XVI. 4—log-line,
 XIII. 551 patent, XX. 27—of engineer, in
 steam-vessels, 656.
 LOGAN (John) XIII. 551.
 — stones, VIII. 187; VII. 764; XV.
 166.
 Loganiaceæ, nat. order of plants, V. 199.
 Loganite, mineral, XV. 80.
 LOGARITHMS, XIII. 552—in algebra, II.
 532—effect of their invention on the
 progress of astronomy, III. 801—inven-
 tion of, I. 563; XV. 776—applied to
 navigation, XVI. 5—to trigonometry,
 XXI. 338.
 Logeman's artificial magnets, XIV. 76.
 LOGGAN (David), engraver, XIII. 551.
 Logi, Caledonian tribe, VI. 74.
 LOGIC, XIII. 567—of induction, I. 803—
 Plato's logical method, XVII. 799—
 necessary logical judgments, XIV. 597
 —medical, 464—character of the article
 on, in this work, XX. 496.
 Login (T.), on the transportation of de-
 trital particles by running water, XVI.
 85.
 Logistique, in war, XXI. 702.
 Logogram, XX. 676, 678.
 LOGRONO, town in Spain, XIII. 635—battle
 of, XX. 464.
 Logwood, V. 190; VIII. 287, 304; XI.
 610—specific gravity of, XII. 89.
 LOHEIA, seaport of Arabia, XIII. 635.
 Lohenstein, poetry of, XVIII. 118.
 Lohuree, Indian town, XIX. 415.
 Loins, vertebrae of the, III. 6—muscles
 of the, 38.
 LOIR-ET-CHEER, in France, XIII. 635.
 LOIRE, department of France, XIII. 635—
 Haute, *ib.*—Inférieure, *ib.*
 — (La), river, XIII. 636; X. 240;
 XVII. 647.
 LOIRET, department of France, XIII.
 636.
 Lois Weedon, system of wheat culture, II.
 308, 309.
 LOJA, Spanish town, XIII. 636.
 Lok (Michael), northern voyages promoted
 by, XVIII. 166, 167.
 LOKEREN, town in Belgium, XIII. 636.
 LOKMAN, XIII. 636; II. 187; IX. 461.
 Lolligidae, fossil, XVII. 114.
 Loligo, genus of mollusks, XV. 400, 395,
 397—gladius of, 399.
 Lolligopsis, genus of mollusks, XV. 399.
 Lollingite, XV. 115.
 Lololus, genus of mollusks, XV. 400.
 Lolland, or Laaland, island, XIII. 138.

LOL—LON

LOLLARDS (The), XIII. 637; VIII. 687,
 688; XVIII. 828.
 Lolle (Peter), his Danish Proverbs, XIX.
 692.
 LOLLÍ (Antonio), violinist, XIII. 637.
 Lollius Urbicus, XIX. 741.
 Lolme (De), on political liberty, X. 738.
 Lomas (Joseph), his silk machinery, XX.
 285.
 Lombard (Augusta), work on bees by, IX.
 23.
 — (PETER), XIII. 637.
 — school of painting, XVII. 72.
 Lombard's hive, III. 295.
 LOMBARDS, XIII. 638; X. 578—their in-
 vasion of Italy, XII. 641 *et seq.*; X. 578;
 XX. 256—their wars with the Romans,
 VII. 313.
 LOMBARDY, XIII. 643; IV. 309—irrigation
 in, XII. 622—monarchy in, XV. 413—
 feudal laws of, IX. 523, 524—iron crown
 of, XII. 536—Charlemagne crowned
 king of, X. 8—climate, XII. 638—shower
 of stones in, XIV. 629—savings-banks,
 XIX. 674—silk produced in, XX. 278.
 Lombe (John), first silk-mill in Britain
 established by, VII. 755; XX. 276.
 LOMBOK, island, XIII. 637.
 Lombrinera, genus of annelides, XI. 299.
 Lomechusa, genus of insects, IX. 104.
 LOMOND (Loch), XIII. 657; VIII. 235;
 XIX. 794; XX. 702—its temperature at
 different depths, VI. 777.
 — Ben, XX. 702.
 LOMONOSOV (M. Wasitowitz), Russian poet,
 XIII. 657.
 LOMSHA, in Russian Poland, XIII. 658.
 LONATO, in Lombardy, XIII. 658.
 Lonchæa, genus of insects, IX. 252.
 Lonchidite, XV. 115.
 Lonchoptera, genus of insects, IX. 244.
 Lonchurus, genus of fishes, XII. 284, 285.
 LONDON, XIII. 658—Royal Academy of
 Arts, II. 67—academies of music, 68—
 repaired by Alfred, 480—architecture of
 St Paul's Cathedral, III. 455; see Paul's
 (St)—arms of, XI. 323—architecture of
 Whitehall, III. 454; of Sir C. Wren's
 edifices, *ib.*; of those of later architects,
 455—architecture and roof of St Paul's
 Church, Covent Garden, 454; VI. 266
 —roof of St Martin's-in-the-Fields, *ib.*
 —Somerset House, III. 455—specimens
 of pointed architecture in, 480—archi-
 tecture of public buildings, 483—site of,
 496—streets and street architecture,
 497, 506—architecture of club-houses, 506
 —Panopticon, *ib.*—sewerage of, 495,
 497 and n.—drainage of, VIII. 126—
 parks, III. 494—Astronomical Society
 of, 815—bread, IV. 380, 381—Royal
 Exchange, XI. 59—Gresham College,
 60—porter, V. 331—fermenting-house
 in Whitbread and Co.'s brewery, 338
 —bricks, 343 *et seq.*—Bridewell, 348—
 bridges, 354 *et seq.*—Blackfriars Bridge,
 III. 409—Southwark Bridge, XII. 583,
 586; V. 361; centre for, VI. 379—
 Vauxhall Bridge, XII. 583, 586—Water-
 loo Bridge, V. 363—Old London Bridge,
 354—piles of London Bridge, VIII.
 213—construction of houses in, VII.
 330, 331—great plague, V. 423; XVII.
 752; its effect on the religious devotions
 of the people, I. 461—great fire, V. 424
 —anti-Catholic riots, 492—Rathbone
 Place water, VI. 351—Chartreuse or
 Charter-house, 428—Great Westminster
 clock, VII. 24—Royal Exchange clock,
 19, 20—the term *cockney*, 52—mint, 68
 Doctors' Commons, 113—College of Phy-
 sicians, *ib.*; XIV. 460; Surgeons, VII. 114
 —Sion College, 115—quantity of coal
 brought to, 44—cutlery of, 601—Deaf
 and Dumb Asylum, 686—proportion of
 deaf and dumb in, 687—docks, VIII. 74,
 75—convent of the Blackfriars, 100—
 Humane Society, 182, 183—roof of Drury
 Lane Theatre, VI. 266—duties on coal
 brought to, VII. 45—port of, VIII. 721;
 V. 355—decrease of mortality in, 755—
 University and King's College, 745;
 XXI. 466, 470—University College, 470

LON—LON

—charitable institutions, VIII. 748—
 vessels registered at, 738—Great Exhi-
 bition of 1851, IX. 453—fish markets,
 VIII. 728; IX. 634, 645, 649—gas-
 works, X. 410—gazette, 443; XVI. 182,
 188, 189—Guy's Hospital, X. 163—inns
 of court, XII. 384—inns of chancery,
 384—Foundling Hospital, IX. 845—fire
 insurance, XII. 417—livery, XIII. 526—
 libraries, 389 *et seq.*—change in the
 variation of the needle at, XIV. 51, 54
 —changes in the dip of the needle, 59
 —cemeteries, 444—banking introduced,
 XV. 453—clearing-house, *ib.*—bills of
 mortality, 600—its municipal privileges,
 682—newspapers of 1714 and 1733, XVI.
 184; of 1760–1820, 185; of later date,
 188, 189—length of pendulum at, XVII.
 384—police, XVIII. 193, 194, 195—
 penny post established, 405—post-office,
 416; see Post-Office—eocene rocks of
 the London basin, XV. 211, 212—Lon-
 don clay, 212, 213; XVIII. 439; XX.
 836—King's Cross railway station, XVIII.
 773—railways connected with, 786, 791 *et*
seq.—prisons, 567, 568—roof of the
 Italian Opera-house, XIX. 399, 400—
 bath and washing establishments, 603
 —lodging-houses, 604—sanitary mea-
 sures adopted in, 605 *et seq.*—over-
 crowded graveyards, 621—savings-banks,
 667—list of societies in, XX. 368; Sta-
 tistical Society, 551—East London water-
 works, pumping-engines at, 612, 614—
 effect of the sulphurous acid in the
 smoke on its principal buildings, 712—
 theatres, VIII. 165; XXI. 169 *et seq.*,
 176—Thames tunnel, see that article.
 LONDON, in Canada West, XIII. 680; VI.
 144.
 — (NEW), in Connecticut, XIII. 680.
 LONDONDERY, XIII. 680—siege of, in
 1689, V. 442; XII. 489—agricultural
 statistics, 516, 517—quays at, XVI. 79.
 — (Lord). See Castlereagh.
 LONG ISLAND, XIII. 683; XVI. 213—
 battle of, XXI. 750.
 — island, or Yuna, XIII. 683; IV. 366.
 — (Loch), XIII. 683.
 — (Major) on the cannibalism of the
 Potowatomies, II. 682.
 — (ROGER), XIII. 683.
 — (St JOHN), XIII. 683.
 Long-boat, IV. 800.
 Longchamps (Selys de), his works on
 insects, IX. 22.
 Longevity, of the antediluvians, III. 267;
 probably caused, in earliest times, by the
 influence of the Tree of Life, I. 453, 454—
 its importance in regard to the inven-
 tion of the useful arts, 453—instances
 of, in the Ionian Islands, XII. 444—
 from abstinence, II. 51—in the Papal
 States, XVII. 243.
 LONGFORD, in Ireland, XIII. 683—agricul-
 tural statistics, XII. 515, 517.
 Long-horns, breed of cattle, II. 341.
 Longhi (Ant.), his work on insects, IX. 18.
 Longicornes, family of insects, IX. 143.
 LONGINUS (Dionysius Cassius), XIII. 684;
 XVII. 221.
 Longipalpi section of insects, IX. 103.
 Longipennæ, family of birds, XVI. 811.
 Longirostres, tribe of birds, XVI. 800.
 Longitarsus, genus of insects, IX. 150.
 LONGITUDE, XIII. 685; X. 480; XVI. 7, 10
 —in astronomy, IV. 6, 12—method of
 reducing geocentric to heliocentric,
 57—methods of finding it, 113, 119;
 X. 472; XVI. 28, 45, 46, 48—on globes,
 X. 486—table of length of degrees of,
 at different latitudes, 481—as given
 by Ptolemy, 467, 472—in connection
 with the trigonometrical survey, XXI.
 336. See Chronometer.
 LONGOBARDI, XIII. 690. See Lombards.
 LONGOBUCO, town of Naples, XIII. 690.
 LONGOMONTANUS (Christian), XIII. 690;
 XIX. 692—on astronomy, III. 799—
 on logarithms, XIII. 553.
 Longprimer type, XXI. 401, 403.
 Longsightedness, cause and remedy of,
 XVI. 695.

LON—LOS

LONGTOWN, in Cumberland, XIII. 690.
 Longueruana, II. 739.
 LONGUS, Greek sophist, XIII. 691.
 Longwall method of working coal, VII. 121.
 Longwood, St Helena, meteorological observations at, XIV. 686.
 LONGWY, French town, XIII. 691.
 LONS-LE-SAULNIER, in France, XIII. 691.
 LOO-CHOO ISLANDS, XIII. 691—language, 217.
 Loodanahs, XI. 466.
 LODIANA, town in Hindustan, XIII. 691.
 LOOE (East and West), villages in Cornwall, XIII. 692.
 Looking-glass. See Mirror.
 Loom, XXI. 783—draw-loom, 785—carpet-loom, VI. 271, 272—Indian, VII. 437—power-loom, 450; first introduced into Glasgow, X. 650; struggle of hand-loom against, XXI. 781—for tapestry, 20—electro-magnetic loom, 789. See Power-Loom.
 LOONGHEE, Burmese town, XIII. 692.
 Loosestrife, order of plants, V. 191.
 Lopares, people of Russian Lapland, XIII. 242, 243.
 Lopez, his piratical expedition to Cuba, VII. 568.
 — DE VEGA, XIII. 692. See Vega.
 Lophiidae, or Lophioids, family of fishes, XII. 310, 311.
 Lophiodon, fossil mammal, XVII. 163.
 Lophioidel, family of fossil fishes, XII. 346.
 Lophius, genus of fishes, XII. 311—fossil, 346—teeth of, XVI. 421, 422, 425.
 Lophobranchiati, family of fossil fishes, XII. 338, 351.
 Lophobranchii, or Lophobranchs, order of fishes, XII. 314, 315.
 Lophopea, polytes, XXI. 1002.
 Lophophorus, genus of birds, XVI. 786.
 Lophosia, genus of insects, IX. 248.
 Lophorina, genus of birds, XVI. 768.
 Lophotes, genus of fishes, XII. 304.
 — genus of birds, XVI. 745.
 Lophyropa, genus of crustacea, VII. 543.
 Lophyrus, genus of insects, IX. 183.
 — genus of reptiles, XIX. 32.
 Lorantheaceæ, nat. order of plants, V. 195.
 LORARI, Roman officers, XIII. 692.
 LORCA, Spanish town, XIII. 692.
 LORCHA, Chinese vessel, XIII. 692.
 LORD, honorary title, XIII. 692.
 — Auckland's group, IV. 268.
 — of the Isles, XI. 279; XIX. 764—iron ship so named, XX. 164.
 Lord's day, I. 502 and *n.*, 503, 504; XIX. 562. See Sunday.
 — prayer, I. 493.
 — supper, XXI. 219.
 Lord-lieutenant of a county, VII. 467.
 LORDS (House of), XIII. 692; VIII. 768; X. 737; XVII. 289, 292—admission of a baron into, IV. 469.
 — of the Articles, XVII. 291.
 Lorente (Dr), on the vegetation of Peru, XVII. 471.
 Lorenzo Marques, on the Mozambique coast, XV. 670.
 Loret (Sieur), his metrical gazette, XVI. 196.
 LORETO, in the Papal States, XIII. 692—Santa Casa at, VI. 306.
 Loretto, town in California, VI. 94.
 LORICA, Roman cuirass, XIII. 693.
 Loricaria, genus of fishes, XII. 263.
 Loricera, genus of insects, IX. 94.
 Loricula, fossils, XVII. 101.
 LORIENT, French port, XIII. 693—ship-building at, XV. 577—population of, X. 277.
 Lories, birds, XVI. 783.
 Loris, genus of mammalia, XIV. 145.
 Lorius, genus of birds, XVI. 783.
 Lorme (Philibert de), his method of constructing roofs, XIX. 394.
 LORN, in Argyllshire, XIII. 693; III. 526.
 LORRAINE, XIII. 693; X. 277—origin of the name, 10—dukes of, XV. 773.
 Loseby (Mr), his mercurial balance, VII. 31.

LOS—LOU

Losh (Mr), his double furnaces for prevention of smoke, XX. 354.
 Lossie, river, XV. 576.
 Lossiemouth, VIII. 632.
 LOSSINI, XIII. 696; XVII. 4.
 LOSTWITHIEL, town in Cornwall, XIII. 696.
 LOT, in France, XIII. 696.
 LOT-ET-GARONNE, XIII. 696.
 Lota, genus of fishes, XII. 270.
 Lothaire, X. 10.
 Lotharius, XII. 644.
 LOTHIAN, XIII. 696. See Haddingtonshire, Edinburghshire, and Linlithgowshire.
 Lotophagi, XIII. 697.
 LOTTERIES, XIII. 696.
 LOTTI (Antonio), XIII. 697.
 LOTUS, plant, XIII. 697; VIII. 431.
 LOUDON (J. Claudius), XIII. 697—on horticulture, XI. 726, 728, 745, 746, 754.
 — Hill, battle of, V. 430; XIX. 755.
 LOUDUN, town in France, XIII. 698.
 LOUGHBOROUGH, in Leicestershire, XIII. 698—population, 321.
 — (Lord), on divorce, VIII. 70.
 LOUGHREA, in Ireland, XIII. 698.
 LOUHANS, town in France, XIII. 698.
 LOUIS, name of French kings, XIII. 698.
 — le Debonnaire, X. 10.
 — the Gross, X. 12—buildings in Paris erected by, XVII. 277.
 — the Stammerer, X. 11.
 — VII, reign of, X. 13—joins the second Crusade, VII. 525.
 — VIII, X. 13.
 — IX, reign of, X. 13—Crusades of, VII. 526; VIII. 483; XVII. 197.
 — X, reign of, X. 15.
 — XI, reign of, X. 25—favours conferred by, on Philippe de Comines, VII. 181—Paris in the reign of, XVII. 278—Montesquieu on the history of, XV. 515—his treatment of the Swiss, XX. 884.
 — XII, reign of, X. 29—his invasion of Italy, XII. 651—Machiavelli's missions to, XIII. 777.
 — XIII, reign of, X. 34—duelling in the reign of, VIII. 231—his improvement of Paris, XVII. 278.
 — XIV, reign of, X. 34—his expeditions against Algiers, II. 571—character of the court of, I. 55—wars of, III. 637; in the Netherlands, IV. 303; against the Dutch, V. 426; XI. 577; with Britain, V. 447—his admiration of Bourdaloue, 249—his treatment of James II., 437, 445—persecution of the Protestants in his reign, VIII. 125—duelling, 231—his army, X. 270—his improvements of Paris, XVII. 279—poetry in the age of, XVIII. 116—police system of, 185—sumptuary laws, 186—his navy, XX. 131—Siamese ambassadors sent to, 234.
 — XV, reign of, X. 34—Damien's attempted assassination of, VII. 641—Paris in his reign, XVII. 279.
 — XVI, reign of, X. 37—execution, 76—general mourning for, 176—Paris improved by, XVII. 279.
 — XVII, X. 97.
 — XVIII, X. 169—departure from Paris, 171—restoration, in 1815, 174—his death and character, 188, 189—his improvements of Paris, XVII. 279—and Talleyrand, XXI. 13, 14.
 — (Dr), on medical jurisprudence, XIV. 423.
 — king of Hungary and Poland, XVIII. 141.
 — Philippe. See Philippe, Louis.
 — French gold coin, XV. 441.
 — island, XIII. 699.
 — Port, in the Mauritius, XIV. 363.
 — (St, knights of), XIII. 111, 120.
 — (St), town in Missouri, XIII. 698; XV. 280.
 Louisbourg, taken by the British, V. 463.
 Louisiade Archipelago, IV. 252, 263.
 LOUISIANA, XIII. 699; XXI. 419, 439—debt of, 428—wines of, 888—its cession to France, V. 589—its transference by the Spaniards to Bonaparte, 593—code of, XIII. 272—rate of interest in, XII. 432.

LOU—LUC

LOUISVILLE, in Kentucky, XIII. 701, 70.
 Louping-ill, in cattle and sheep, XXI. 575.
 LOURDES, town in France, XIII. 701.
 Louise. See Lica.
 LOUTH, Irish county, XIII. 701—town, 702—agricultural statistics, XII. 515—518.
 LOUVAIN, XIII. 702—university of, IV. 620; XXI. 492—library of, IV. 633.
 Louvel, assassin, X. 181.
 Louvet's romances, XIX. 289.
 LOUVIERS, town in France, XIII. 703.
 Louvre, XVII. 281, 417; III. 453—Pont du, XII. 580.
 Lovat (Lord), crofter system encouraged by, XII. 439.
 Love, an ingredient in the spirit of chivalry, VI. 605—interest imparted by it to the drama, VIII. 138, 146, 154—an attribute of God, XXI. 191.
 Love-apple, XI. 745.
 Love-feasts, II. 230.
 Love-lies-bleeding, plant, V. 203.
 Lovel (Viscount), his insurrection in Henry VII's reign, VIII. 695.
 — poet, VII. 109.
 LOVEFACE (Richard), poet, XIII. 703.
 Lovell, his report on the seasoning of gunstocks, XX. 169.
 Löwenbrügger (Nicholas), XX. 885.
 Lowe (Sir Hudson), his letters and journals, XV. 796.
 — (James), his screw-propeller, XX. 658.
 — a Scotch surgeon, XX. 818.
 Loweite, mineral, XV. 99.
 LOWELL, in Massachusetts, XIII. 703.
 LOWER (Richard), XIII. 704; II. 761, 762.
 — (Sir William), XVI. 528.
 LOWESTOFF, XIII. 704—action with the Dutch off, V. 422.
 Lowicz, town in Poland, XIII. 704.
 Lowlands of Scotland, XIX. 791, 792.
 Lowndes on the coinage, VII. 78, 79, 378.
 Lowry (Wilson), on engraving, VIII. 810.
 LOWTH (Dr Robert), XIII. 704—his opinion of the common English translation of Bible, I. 18, *n.* 1—his opinion of Hooker's style, 39, *n.* 2—on Harris's Hermes, XI. 233.
 — (Dr WILLIAM), XIII. 705.
 Lowther (Sir James), V. 497.
 Lowthers, mountains, XIII. 174.
 LOXA, or Loja, town in Spain, XIII. 705, 636.
 — in South America, XIII. 705.
 Loxia, genus of birds, XVI. 761.
 Loxocera, genus of insects, IX. 252.
 Loxoclast, mineral, XV. 70.
 Loxodon, genus of fishes, XII. 324.
 Loxonema, fossil mollusks, XVII. 109, 110.
 LOYOLA (Ignatius), XIII. 705; XII. 360, 750—his Spiritual Exercises, and letter on Obedience, 752, 753.
 Loyosa, his visit to the Ladrone Islands, XVIII. 268.
 Lozenge, in heraldry, XI. 330.
 LOZÈRE, in France, XIII. 705.
 Lubbock (Sir John), on annuities, III. 225—on the orbits of comets, VII. 169—on probability, XVIII. 591—on the tides, I. 818—his astronomical labours, 825.
 LÜBECK, German city, XIII. 705—its commerce, VII. 187; with Denmark, 739—one of the earliest members of the Hanseatic League, XI. 213, 214—coins of, XV. 444—weights and measures, XXI. 812.
 — principality of, XIII. 706; XVI. 504.
 Luben, Prussian town, XIII. 248.
 LUBIENIETSKI (Stanislaus), XIII. 706.
 LUBLIN, city of Poland, XIII. 706.
 LUBNŮ, Russian town, XIII. 706.
 Luc (John André de), XIII. 706—on barometrical measurements, I. 730; IV. 464—his disingenuous appropriation of the discovery of latent heat, 739—on Hannibal's route across the Alps, VI. 293, *n.*—on evaporation, IX. 408—his hygrometer, XII. 186—his electric pile, XXI. 619—Watt's letter to, 776 and *n.*

LUC—LUD

Lucan (Earl of), XIX. 505.
 LUCANIA, in Italy, XIII. 707.
 Lucanides, family of insects, IX. 127.
 LUCANUS (M. Annæus), XIII. 708—poetry of, XVIII. 106—death of, XIX. 337—Burman's edition of his Pharsalia, V. 788.
 — genus of insects, IX. 128.
 Lucar (Cyprian), on gunnery, XI. 104, 106, 114.
 Lucas (Charles), XII. 494.
 — (H.), his work on insects, IX. 18.
 — Paciolus, or De Burgo, on algebra, II. 484—on geometry, X. 504.
 — (T. M.), his system for teaching the blind to read, IV. 782; XVIII. 554.
 Lucayas, or Bahamas, IV. 365.
 LUCCA, Duchy of, XIII. 708—population of, XII. 634—weights and measures, XXI. 812.
 — Italian city, XIII. 708.
 Luccock (Mr), his estimate of the supply of wool, XXI. 906.
 Luce Abbey, XXI. 864.
 — BAY, XIII. 709; XXI. 863.
 LUCENA, town in Spain, XIII. 709.
 LUCERA, town of Naples, XIII. 709.
 Lucernariadæ, polytes, XXI. 1006.
 LUCERNE, in Switzerland, XIII. 710; XX. 882.
 — lake of, XIII. 710; XX. 889; XXI. 494—temperature of, VI. 777.
 — culture of, II. 329.
 Luchssapphir, mineral, XV. 88.
 LUCIA (St), island, XIII. 710.
 LUCIAN (St), presbyter of Antioch, XIII. 711—his recension of the New Testament text, XIX. 835, 836.
 LUCIANISTS, XIII. 711.
 LUCIANUS, XIII. 711—his description of a disease at Abdera, II. 23—ridiculed apparitions, III. 315—on the Deluge, VII. 713.
 Lucid-disc micrometer, XIV. 757.
 LUCIFER, bishop, XIII. 712.
 — matches, XIV. 352—unwholesomeness of the manufacture, XIX. 619.
 Luciferians, sect, XIII. 712.
 LUCILIUS (Caius), XIII. 712.
 Lucimeter, XVI. 535.
 Lucina, Egyptian goddess, VIII. 439.
 — genus of insects, IX. 254.
 — name of Juno, XIII. 20.
 Lucinidae, fossil mollusks, XVII. 107, 108.
 — genus of mollusks, XV. 350—fossil, XVII. 107.
 Luciperca, genus of fishes, XII. 276.
 Lucinopsis, genus of mollusks, XV. 350—fossil, 108.
 LÜCKE (G. C. Friedrich), XIII. 713—on the Book of Revelation, XIX. 98, 99.
 LUCKENWALDE, town in Prussia, XIII. 713.
 LUCKNOW, in Hindustan, XIII. 713; XI. 477—outbreak of the sepoy mutiny at, XVI. 307—retaken from the rebels, 315.
 LUCKPUT BUNDER, in Hindustan, XIII. 714.
 LUCON, town in France, XIII. 714.
 LUCRETIA, XIII. 714.
 LUCRETIVS, Roman poet, XIII. 714—philosophy of, I. 186, *n.*—on apparitions, III. 308—poetry of, XVIII. 104—Wakefield's edition of, XXI. 681.
 Lucrino (Lago), XII. 637; XX. 239.
 Lucullite, XV. 92.
 LUCULLUS (Lucius Lucinius), XIII. 715; XIX. 322—his invasion of Armenia, III. 616—his banqueting-rooms, IV. 421—library, XIII. 384—his expedition against Mithridates, XV. 284.
 — (M. LUCINIUS), XIII. 715.
 Lucy (Sir Thomas), XX. 82, 83.
 Lud, VIII. 46.
 LUDEHAUNAH, XIII. 715. See Loodiana.
 Luders (General), his invasion of Transylvania, XII. 25.
 Ludi scenici, grossness of, VIII. 143.
 LUDLOW (Edmund), XIII. 715.
 — rocks, XV. 197, 198—fossil fishes in, XVII. 116.

LUD—LUT

LUDLOW, town in Shropshire, XIII. 716.
 LUDOLPHUS (Job), XIII. 716.
 LUDWIGSBURG, XIII. 716.
 LUDWIGSLUST, XIII. 716.
 Lug-worm, XI. 296.
 LUGANO, Swiss town, XIII. 716; XX. 882.
 — (LAKE OF), XIII. 716, 644; XII. 637; XXI. 248.
 LUGDUNUM, XIII. 716—Batavorum, 717.
 LUGO, in the Papal States, XIII. 717.
 — in Spain, XIII. 717; X. 373.
 Lutprand, Lombard king, XIII. 640, 641, 642; XII. 642.
 — on a musical tree, XVI. 709.
 LUKE (St), evangelist, XIII. 717—his Gospel and the Acts, XIII. 718.
 — (St), hospital, XIII. 673.
 Lukin's experiments on the seasoning of timber, VIII. 209.
 LULLI (Giovanni Battista), XIII. 718.
 LULLY (Raymond), XIII. 719.
 Lumachello, XV. 92.
 Lumbago, XIX. 142.
 Lumbar vertebrae, III. 6, 75.
 Lumbering, timber trade, VI. 142; XXI. 893.
 Lumbricus, genus of annelides, XI. 300.
 Luminosity of plants, V. 169—of insects, IX. 107; XIII. 458—of the ocean, ib.; XVII. 574; XXI. 998 and n. 2—of decaying animal matter, XIII. 457.
 Luminous waves, I. 898—barometer, IV. 455—jar, VIII. 545.
 Lumley Castle, VIII. 267.
 Lunar observation, I. 833, 229—theory, 814 *et seq.*, 825 *et seq.*, 849.
 — month. See Moon.
 — year. See Year.
 — distances, XVI. 38; XIII. 686—to find the longitude by, XVI. 48, 689.
 Lunardi's aerial voyages, II. 178.
 Lunatic asylums, XIV. 426—in Dublin, VIII. 223—Crichton Institution, Dumfries, 240—in Russia, XIX. 534.
 Lunatics, VIII. 748—proportion of, in asylums, to the population, 749.
 LUNAWARA, in Hindustan, XIII. 719.
 Luncarty, battle of, XIX. 745.
 LUND, town in Sweden, XIII. 720—library at, 427—university, XXI. 492.
 LUNDY ISLAND, XIII. 720; VII. 764.
 Lune of Hippocrates, XX. 520.
 — river, XIII. 177, 180—aqueduct over, III. 388—plans of its channel, XVI. 72, 84—improvement of its navigation, 77—increase of tidal water by works on, 84—physical characteristics of, 87.
 LÜNEBURG, town of Hanover, XIII. 720—province, XI. 211.
 LUNEL, French town, XIII. 720.
 LUNETTE, in fortification, XIII. 720; IX. 810.
 LUNÉVILLE, town in France, XIII. 720—treaty of, X. 121; XV. 793; XVIII. 655.
 Lungs, III. 66—effect of training on the, VIII. 25—necessity of air to, 55—functions of, XVII. 662—excretion from, 665—test, by their floating or sinking in water, of a child having died before or after birth, XIV. 429.
 — of the lower animals, III. 112—in the mammalia, XIV. 133—inflammation of, in the domestic animals, XXI. 572.
 Lunnite, mineral, XV. 103.
 Lunule, in bivalve shells, XV. 341, 342.
 LUPERCALIA, Roman festivals, XIII. 720.
 Luperci, Roman priests, XIII. 720.
 Luperus, genus of insects, IX. 150.
 Lupulin, V. 206.
 Lurcher, dog, XI. 772.
 Lure, for hawks, XI. 249.
 LURGAN, town in Ireland, XIII. 721.
 LUSATIA, in Germany, XIII. 721.
 LUSITANIA, XIII. 721; XX. 458.
 LUSTRATION, XIII. 721.
 Lustre of minerals, XV. 58.
 LUSTRUM, XIII. 721.
 LUTE, XIII. 721.
 — stringed instrument, XIII. 722; XV. 716.
 Luteolin, VIII. 295.
 Lutetia, planet, IV. 91.

LUT—LYE

Lutf Ali Khan, king of Persia, XVII. 441.
 LUTHER, XII. 722; XVIII. 485—his contempt for Aristotle, I. 16—instances of his credulity and superstition, 238—Mosheim on his theological system, 21, n. 1—his Colloquia Mensalia, II. 740; I. 238—his combats with the devil, III. 312—his German Bible, IV. 702—his propositions against indulgences, XII. 378—his liturgy, XIII. 516—Augsburg Confession partly drawn up by, IV. 240—Archdeacon Hare's vindication of, XI. 228—his connection with Melancthon, XIV. 476—his share in effecting the Reformation, XVIII. 821 *et seq.*—his works proscribed in Scotland, XIX. 772.
 LUTHERANS, XIII. 740—ordination among, XVI. 704—their hymns, XII. 190—their places of worship in England, VIII. 745; in Europe, IX. 394; in Hungary, XII. 16—their churches in America, XVIII. 492; in Prussia, 658; Russia, XIX. 529.
 LUTON, XIII. 741; IV. 569—Luton Hoo, 569.
 Lutra, genus of mammalia, XIV. 159.
 Lutraria, genus of mollusks, XV. 350—fossil, XVII. 108.
 Lutterloch (Henry), V. 504.
 LUTTERWORTH, in Leicestershire, XIII. 741, 321.
 Lutz (M.), his balance springs, VII. 29.
 Lutzembourg (Count de), on magnetic somnambulism, XX. 423.
 LUTZEN, in Prussian Saxony, XIII. 741—battle of, X. 161; XX. 850.
 Luvarus, genus of fishes, XII. 298.
 LUXEMBURG, province of Belgium, XIII. 741; IV. 601.
 — GRAND DUCHY OF, XIII. 741; IV. 596.
 — (DUKE OF), XIII. 742.
 LUXEUIL, town in France, XIII. 742.
 LUXOR, or El-Uksur, in Egypt, XIII. 742; VIII. 507; III. 436.
 Luxury, not disadvantageous, XVIII. 256.
 Luz, or Bethel, IV. 686.
 Luzaney (Gommer de), on birds, XVI. 725.
 Luzia (Santa), Cape Verde Island, XXI. 544.
 LUZON, or Luçon, island, XIII. 742; XVII. 512.
 LYBIA, XIII. 743. See Libya.
 Lybster, Caithness-shire, height of waves at, XI. 224.
 Lycabettus, hill near Athens, IV. 171.
 Lycæna, genus of insects, IX. 208.
 LYCÆUM, XIII. 743; IV. 170.
 LYCAON, XIII. 743.
 LYCAONIA, in Asia Minor, XIII. 744.
 LYCIA, in Asia Minor, XIII. 744—language, 200, 210—coins of, XVI. 377—sculptures discovered in, XIX. 853.
 Lycodes, genus of fishes, XII. 310.
 Lycodon, genus of reptiles, XIX. 56.
 LYCOMEDES, king of Scyros, XIII. 744.
 LYCON, philosopher, XIII. 744—an accuser of Socrates, XX. 380.
 Lycoperdina, genus of insects, IX. 151.
 LYCOPHRON, Greek poet, XIII. 745.
 — Thessalian, XIII. 764.
 Lycopodiaceæ, nat. order of plants, V. 216—reproductive organs of, 144—embryogeny in, 157.
 Lycopodium clavatum, seeds of, employed for imitating lightning, XVIII. 706.
 Lycopolis, VIII. 505.
 Lycosa, genus of arachnides, III. 383.
 Lyctus, genus of insects, IX. 142.
 LYCURGUS, Spartan lawgiver, XIII. 745; XX. 499.
 — orator, XIII. 746.
 Lycus, genus of insects, IX. 107.
 LYDGATE (John), XIII. 746—poetry, XVIII. 120.
 LYDIA, in Asia Minor, XIII. 746—monarchy of, XV. 413—coins of, XVI. 378.
 Lydian stone, XV. 69.
 LYDIUS LAPIS, XIII. 749.
 LYE (Edward), XIII. 749.
 — its use in bleaching, IV. 768, 769 *et seq.*
 Lyell (Sir Charles), on the Falls of Niagara, IV. 135, 136—on the Deluge, VII. 722—his description of Kent, XIII. 64—

LYG—LYT

on the elevation of the Swedish shores, IV. 403; XX. 860—on the geology of Madeira, XIII. 801—on igneous rocks, XV. 131—on the deposits of rivers, 140—on the elevation and depression of land, 167 and n. 2—on the oolitic coal-field of Richmond, 209—on the "loess" or "lehm" of the Rhine, 217—on the quantity of matters suspended in rivers, XVI. 86, n. 1—on reptilian foot-marks at Greensburg, XVII. 132—on the fossil remains of birds, 154, 155—his subdivision of the tertiary strata, 637—his theory of volcanoes, XXI. 606.
 Lygaeus, genus of insects, IX. 162.
 LYME-REGIS, in Dorsetshire, XIII. 749.
 Lymexylon, genus of insects, IX. 112.
 LYMRINGTON, XIII. 749.
 — shrimp, VII. 543.
 Lymph, II. 782—cells, XVII. 650.
 Lymphatic glands, II. 805.
 Lymphatics, II. 803—discovery of the distinction between the lacteals and, 761—further discoveries respecting the, 766—their connection with the veins, 795—valves of, 805.
 Lynch (Captain), his survey of the Dead Sea, III. 761; XVII. 186, 187.
 — LAW, XIII. 749.
 LYNCHBURG, in Virginia, XIII. 749.
 Lyndhurst (Lord), on the Warrender divorce case, VIII. 72, n.
 Lynedoch (Lord), IV. 652.
 LYNN, or Lynn-Regis, in Norfolk, XIII. 750—sand for window glass found near, X. 662.
 — in Massachusetts, XIII. 750.
 Lynx, XIV. 171—its fur, X. 349.
 LYON KING-AT-ARMS, XIII. 750—court of, XI. 320.
 — (GEORGE FRANCIS), XIII. 750—his visit to Fezzan, IX. 530—his arctic voyages of discovery, XVIII. 171.
 — (David), on magnetic metals, XIV. 15.
 — (Loch), XVII. 455.
 Lyon's Inn, XII. 385.
 LYONNAIS, French province, X. 277—wines of, XXI. 883.
 LYONNET (Peter), XIII. 750—his work on the caterpillar of *Cossus ligniperda*, IX. 5, 212.
 LYONS, XIII. 751; XIX. 150—Mongolier's balloon ascent from, II. 176—events at, in 1793, X. 80—Pont de l'Archevêche, XII. 581—troubles at, in 1834, X. 210—population, 277—silk manufacture at, 255; XX. 278.
 — GULF OF, XIII. 752.
 Lyonsia, genus of mollusks, XV. 350.
 Lyopomata, order of mollusks, XV. 339.
 Lyra, constellation, IV. 79.
 Lyrate leaf, V. 90.
 LYRE, XIII. 752.
 Lyre-tail, bird, XVI. 754.
 LYRIC POETRY, XIII. 752—of Greece, XVIII. 102.
 Lyriocephalus, genus of reptiles, XIX. 32.
 Lyrodosma, genus of mollusks, XV. 349—fossil, XVII. 106, 105.
 Lyrops, genus of insects, IX. 195.
 Lysander, Athens taken by, IV. 208.
 LYSIAS, Greek orator, XIII. 752—his oration for Socrates, XX. 392.
 Lysicrates, choragic monument of, III. 442, 462, 463; IV. 164—imitation of, in D. Stewart's monument, Calton Hill, Edinburgh, VIII. 406.
 Lysidice, genus of annelides, XI. 298.
 LYSIMACHUS, XIII. 753.
 LYSIPPUS, XIII. 753; XIX. 857.
 LYSONS (Daniel), XIII. 753.
 — (SAMUEL), XIII. 754.
 Lystra, genus of insects, IX. 169.
 Lystronichus, genus of insects, IX. 132.
 Lyte (Maxwell), his photographic process, XVII. 549.
 Lythraceæ, nat. order of plants, V. 191.
 Lytta, genus of insects, IX. 134.
 LYTTLETON (George, Lord), XIII. 754—on the conversion of St Paul, XVII. 345, n. 4.
 LYTTLETON (Thomas, Lord), XIII. 754.

LYT—MAC

Lytton (Sir Edward Bulwer), sum received by, for the lease of his works, VII. 356—his exertions for the reduction of the newspaper stamp, XVI. 189—as a novelist, XIX. 283—his inferiority to Sir Walter Scott in representing the past, 280—his view of Rienzi's character, 171.
 M
 M, letter of the alphabet, XIII. 755—in abbreviations, II. 19.
 MAAT (John), XIII. 755; IV. 753.
 Maberly (Col.), on the penny postage, XVIII. 411.
 MABILLON (Jean), XIII. 755—on Egyptian paper, XVII. 248.
 MABLY (G. Bonnot de), XIII. 755.
 MABUSE, or Maubeuze (Jan de), XIII. 755.
 Macacus, genus of mammalia, XIV. 141—fossil, XVII. 167.
 MACADAM (John Loudon), XIII. 755—on road-making, XIX. 225.
 M'ALL (Mr), on the iron ores of Ireland, XII. 541.
 MACAO, in China, XIII. 755.
 MACARONIC verse, XIII. 756—origin of the name, VIII. 249, n. 3—Dunbar's examples of, 249; and Drummond's Ptolemy-Middinia, 194, n. 2—Folengo's, IX. 749.
 Macarthur (Capt. John), an eminent wool-grower in New South Wales, XXI. 911.
 MACARTHY ISLAND, XIII. 756; X. 394.
 MACARTNEY (George, Earl), XIII. 756—on China, VI. 590—on Chinese theatrical exhibitions, 579.
 — Cock, XVI. 790.
 MACASSAR, XIII. 756; VI. 361—oil, XVI. 495.
 MACAULAY (Catherine), XIII. 756.
 — (Lord)—his account of the trial and character of Richard Baxter, IV. 521—on the character of Lord Arlington, 654; Earl Temple, XI. 59; Earl of Oxford, 229; Duke of Berwick, IV. 678; Dr William King, XIII. 90—on the state of the law, 271—on the Duke of Marlborough, VI. 715—on Collier's View of the Stage, VII. 115—on Cromwell, 515—his verses on the Dioscuri, VIII. 36—on Milton, XV. 28—on the copyright of books in former times, VII. 335—his survey of British society prior to 1688, XI. 547—effect on Robert Hall of one of his articles in the Edinburgh Review, 194—on the early history of Rome, XVI. 261—on the Printing License Act, XIII. 358—his charges against William Penn, XVII. 391—on Sir Wm. Petty, 502—on the character and eloquence of the Earl of Chatham, 722, 723—on Boswell as a biographer, V. 64—his elevation to the peerage, XVI. 282—his character of Seneca, XX. 47—on Bishop Sprat, 518—on Voltaire's mission to Frederick the Great, XXI. 659.
 Macaws, birds, XVI. 780.
 MACBETH, XIII. 757; XII. 442; XIX. 746—tragedy of, VIII. 150.
 Macbride (Capt.), on the British navy, V. 519.
 MACCABEES, Books of, XIII. 757—supposed origin of the name, XII. 769.
 Maccabeus (Judas), XII. 733, 769; XVII. 194.
 Maccall (Hugh), his martyrdom, V. 428.
 MACCARONI, XIII. 757; XX. 249.
 M'Carthy (Sir Charles), III. 726.
 M'Carthy's Island, X. 394.
 M'Clelland (Dr), on Indian fishes, XII. 257, 258, 263.
 Macclesfield, Countess of, VIII. 70.
 — town in Cheshire, XIII. 758.
 M'Clintock (Capt.), arctic fossils brought home by, XV. 209—his arctic search expedition, XVIII. 175.
 M'Clure (Sir Robert), his discovery of a north-west passage, X. 299, 474; XI.

MAC—MAC

- 38—his northern explorations, XVIII. 174.
 M'Cormick's reaping machine, II. 276.
 M'CRIC (Thomas), D.D., XIII. 758; XVIII. 500, 502—his Life of Knox quoted, XIII. 124, 126, *et seq.*—his Life of Melville, XIV. 489—on Dr Andrew Thomson, XXI. 233—on the course of study in St Mary's College, St Andrews, XXI. 474.
 Maccullagh (Prof.), I. 919 and *n.* 2—on optics, XVI. 549, 668, 680, 685.
 MACCULLOCH (Dr John), XIII. 759—on the second sight, III. 318, *n.* 1—on vitrified forts, IX. 790.
 M'Culloch, on the prevalence of fevers and other diseases in Ireland, XII. 504—on absenteeism, II. 50—on commercial companies, VII. 218—on the payment of wages out of the poor-rates, VIII. 749—on fairs, IX. 468.
 MACDIARMID (John), XIII. 759.
 MACDONALD (Duke of Tarentum, Marshal), XIII. 760; X. 111, 154.
 ——— (Dr), on digestion, VIII. 21.
 ——— (J.), on the variation of the needle, XIV. 54.
 ——— and Leslie's granite-works in Aberdeen, II. 31.
 Macdonnell (Governor), on the river Gam-bia, X. 394.
 Macdowall (C.), his clock escapement, VII. 10; applied to watches, 32.
 MACDUFF, town in Banffshire, XIII. 760.
 MACE, XIII. 760; V. 140, 204—of the Banda Islands, IV. 410.
 MACEDO (Jose Agostinho de), poet, XIII. 760.—Egyptian deity, XI. 386.
 MACEDONIA, XIII. 760; XI. 12; XIX. 312—Macedonian army, III. 626; era, VI. 671; months, *ib.*; empire, XI. 542; XV. 412—coinage of, XVI. 368. See Alexander the Great.
 MACEDONIUS, name of two bishops of Constantinople, XIII. 776.
 MACER (C. Licinius), Roman historian, XIII. 776.
 ——— officer of the law courts, XI. 321.
 MACERATA, Italian city, XIII. 776—delegation of, XVII. 243—university of, XXI. 492.
 Maceration, perfumes prepared by, XVII. 408, 409.
 Macfarlane (Mr), his account of the Turkish army, III. 659, 660, 661.
 M'Gaughey's electro-magnet, XXI. 641.
 Macgill (Mr), on the Black Sea, IV. 740.
 MACGILLICUDDY REEKS, XIII. 776, 72.
 Macgillivray (John), on the Louisiade Archipelago, IV. 263—on the natives of New Guinea, 264.
 ——— (Dr WILLIAM), XIII. 776—on the scenery of the Hebrides, XI. 279—his correction of Audubon's style, IV. 239—his Life of Aristotle quoted, XIV. 122—on British birds, XVI. 734, 742, 747, 764, 792.
 Macgregor (Mr), on the Falls of Niagara, VI. 136—on Halifax, XI. 188.
 M'Grigor (Sir James), on the plague, XVII. 748 *et seq.*
 Macguire (Lord), his rebellion, V. 319.
 Machairon, fossil tiger, in the pampas of South America, XVII. 608, 639.
 Machairodus, fossil quadruped, XVII. 172—dentition of, XVI. 464, 479, 480, *n.* 2.
 Machaon, XX. 809.
 Machetes, genus of birds, XVI. 804.
 Machiavellism, religious, its bad effects on philosophy and morals, I. 23.
 MACHIAVELLI (Nicolo), XIII. 777—character and principles of, I. 22 *et seq.*—his real intentions in writing The Prince, 234—no friend to the priesthood, although they have often availed themselves of his policy, 23—Hume's estimate of, 24—his alleged vindication of himself and writings, 235—M. Daunau's notice of his life and writings, 236—influence of his opinions on Italian diplomacy, VIII. 39—comedy by, XVIII. 110—Frederick the Great's work against, 651.
 Machilis, genus of insects, IX. 261.

MAC—MAC

- Machin (John), I. 700, *n.* 1—on the quadrature of the circle, *ib.*; XX. 523.
 Machinery, effects of its use on the condition of the people, VII. 457—effect of, in putting down combinations, 163—hydraulic, XII. 163—for the manufacture of iron, 558—excellence of British, XIV. 277—exportation of, *ib.*—improved machinery alleged to be injurious to the operatives, 278—opposition to the introduction of, XXI. 781—provision against accidents from, 790—unguents for resisting friction in, XIV. 405; and to prevent heating, 408—manufacture of, in France, X. 256; Leeds, XIII. 313. See Friction, Mechanics.
 MACHINES, XIII. 783—theory of, XIV. 383; writers on, I. 881—agricultural, II. 270—parts of a machine, XIV. 383—for raising water, XII. 174—modulus of, XIV. 404—purposes and effects of, 414—classification of, *ib.*—Coulomb's theory of simple, VII. 462—printing-machines, XVIII. 558—of varying velocity, working of, XIV. 410.
 MACHINLETH, Welsh town, XIII. 783.
 Machler (F. J.), his work on insects, IX. 22.
 Machlinia (William), printer, XVIII. 537; XXI. 401.
 Machera, genus of mollusks, XV. 350.
 Machonochie, on the preservation of timber, XX. 167.
 Macielowski (Dr), on the character of Livy and Dionysius as historians, VI. 739—on the feudal system, IX. 521.
 Mack (General), V. 599; X. 110, 137, 138; XXI. 417.
 Mackay (General), V. 440, 441.
 MACKENZIE (Sir Alexander), XIII. 783; XVIII. 170.
 ——— (Dr), on the Admirable Crichton, VII. 498 and *n.* 2.
 ——— (Sir GEORGE), XIII. 783; V. 429, 718—his defence of the treatment of Charles I. by the Scotch, 409, *n.*—his equivocating account of the treatment of Mitchell, 430, *n.*—his character of Lord Stair, VII. 632, *n.* 4—on heraldry, XI. 324, 338.
 ——— (Sir G. Stewart), on Iceland, XII. 198, 200, 202—on colourless ink, 383—on hot-houses, XI. 726.
 ——— (HENRY), XIII. 784—has delineated Hume's character in the story of La Roche, I. 368—his novels, XIX. 275.
 ——— (Mr, of Ardross), on salmon fisheries, IX. 609 *n.* 2, 610.
 ——— (Dr Murdoch), on the plague, XVII. 748 *et seq.*
 ——— RIVER, XIII. 785; XVII. 605.
 Mackerel, XII. 293; IX. 764—fishery of, in Britain, 645; XII. 293; England, VIII. 727; Ireland, IX. 634; Dorsetshire, VIII. 112.
 ——— sky, XIV. 656.
 Mackinac, climate of, XXI. 421.
 Mackinaw, straits of, XIV. 739, 740.
 MACKINTOSH (Sir James), XIII. 785—his Dissertation on the Progress of Ethical Philosophy, I. 291; circumstances under which that Dissertation was undertaken, 293—Dr Whewell's remarks on his ethical views, 296; on his doctrines regarding conscience, 298; association of ideas, 305; the relation of religion and morality, 307; and on free-will, *ib.*—on the independence of Geneva, IV. 391—on the balance of power, *ib.* and *n.* 1—on the reverence due to originality of mind, I. 808—on the early Britons, V. 373 *et seq.*—his bills for the improvement of the criminal code, 633, 638—his characters of Playfair and Jeffrey, I. 803, *n.*; of Canning, VI. 177; Sir S. Romilly, VIII. 241; George Wilson, *ib.*; C. J. Fox, IX. 858—mistake of, in regard to the opponents of Hobbes, VII. 579, *n.* 3—on Cardinal Wolsey, VIII. 698—on the confiscation of church property by Henry VIII., 702—on Butler's Analogy, VI. 33—on the alleged intention to persecute the Catholics in the reign of

MAC—MAC

- Edward VI., VIII. 710—his account of Edgar Atheling, 668 *n.*—on Gibbon and Robertson, X. 617—his intimacy with Robert Hall, XI. 191—on the Independents, XII. 372—his account of the library at Goa, XIII. 431—on association of ideas, XIV. 596—Mill's criticism on his Dissertation, XV. 12—his connection with the newspaper press, XVI. 185—on the character of Hume, XII. 7—on Paley's ethical theory, XVII. 201—his commendation of Suarez's treatise, De Legibus, &c., XX. 786.
 Mackintosh (Mr), conservatory constructed by, XI. 755.
 Mackintosh's waterproof cloth, VI. 203.
 MACKLIN (Charles), XIII. 787.
 MACKNIGHT (Dr James), XIII. 787.
 Maclaren, on the site of Troy, XXI. 356 *et seq.*
 M'Lauchlan (Rev. T.), on Ossian's poems, XVII. 7 and *n.*
 MACLAURIN (Colin), XIII. 787; I. 806, 823—his opposition to Leibnitz's law of continuity, 133—contributed to the advancement of physical astronomy, 692—his method of expounding forces by co-ordinates advanced the science of dynamics, 720—on the earth's figure, 772; IX. 552—on the tides, I. 680—on the geometric properties of bees' combs, IV. 578—on the inverse problem of centripetal forces, VIII. 363—on fluxions, IX. 676; X. 505—his attempt to demonstrate the impossibility of the existence of giants, 605—on the motion of fluids, XII. 72—his theorem in fluxions, IX. 692—on the tides, XXI. 250.
 Macleay (Wm. Sharpe), on the classification of animals, III. 173—his classification, 191; IX. 59, 60—on the metamorphosis of insects, 56, 57—on the order Strepsiptera, 220, 221—on the Linnaean algae, III. 194—his entomological works, IX. 13—on zoophytes, XXI. 973.
 M'Lelland (Dr), on the Indian cyprinidae, XII. 257.
 Macleod (Mr), his account of a large serpent, XIX. 60.
 Macles, twin crystals, XV. 51.
 MacLise (Joseph), his surgical anatomy, III. 74.
 Maclura aurantiaca, tree, XVII. 764.
 Maclurea, fossil mollusks, XVII. 109, 110.
 Maclurite, mineral, XV. 89.
 M'Mahon (General), XIX. 644—created field-marshal, *ib.*
 M'Millan (Rev. John), XVIII. 502.
 Macnab (John), his experiments on freezing mixtures, VI. 353.
 Macnaughton (Sir Wm.), murder of, V. 667; II. 208.
 MACNEILL (Hector), poet, XIII. 788.
 M'Neill (Sir John), XVII. 442—rails used by, for the Great Southern and Western Railway, XVIII. 755.
 ——— origin of the family of, XI. 280, *n.*
 MACNISH (Dr Robert), XIII. 789.
 MACON, town in France, XIII. 789.
 ——— in Georgia, United States, XIII. 789.
 Maconochie (Captain), his mark system for prisoners, XVIII. 584.
 MACPHERSON (James), XIII. 789—his publication of Ossian, XVII. 5—Dr Blair's patronage of, and dissertation on; his translation of Ossian, IV. 750.
 ——— on the banking crisis of 1792-93, XV. 459.
 Macquaria, genus of fishes, XII. 278.
 Macquarie (General), his administration in New South Wales, IV. 272.
 ——— river, IV. 255; XV. 697.
 Macquart (Jean), his works on insects, IX. 16.
 MACQUER (P. Joseph), chemist, XIII. 790—on dyeing, VIII. 274 *et seq.*
 Macraspis, genus of insects, IX. 123.
 Macraw (Wm.), his bichromatic process in photography, XVII. 550—his application of photography to porcelain, &c., 551—his improvement on the binocular camera, XX. 691.

MAC—MAD

- Macready (Mr), his management of Drury Lane Theatre, XXI. 174.
 Macrinus, Roman emperor, XIX. 347.
 MACROBIUS (A. A. Theodosius), XIII. 790.
 Macroceras, genus of insects, IX. 200, 228.
 Macrocerus, genus of birds, XVI. 780.
 Macrocheles, genus of arachnides, III. 387.
 Macrochilus, fossil mollusks, XVII. 109, 110.
 Macrocystis pyrifera, sea-weed, V. 229; XVII. 630.
 Macroductyla, tribe of insects, IX. 116.
 Macroductyles, family of birds, XVI. 806.
 Macrodon, fossil mollusks, XVII. 106.
 ——— genus of fishes, XII. 251.
 Macroglossa, genus of insects, IX. 210.
 Macroglossus, genus of mammalia, XIV. 148.
 Macronota, genus of insects, IX. 127.
 MACROOM, town in county of Cork, XIII. 790.
 Macropeza, genus of insects, IX. 226.
 Macropodus, genus of fishes, XII. 290.
 Macropoma, genus of fossil fishes, XII. 337; XVII. 127.
 Macroptalma, fossil crabs, XVII. 102.
 Macropus, genus of mammalia, XIV. 176—teeth of, XVI. 449.
 Macroramphus, genus of birds, XVI. 803.
 Macrorhinus, genus of mammalia, XIV. 172.
 Macroscelis, teeth of, XVI. 451.
 Macrosemius, genus of fossil fishes, XII. 336.
 Macrospandylus, fossil reptiles, XVII. 152.
 Macrostoma, genus of fossil fishes, XII. 344.
 Macrotherium, genus of fossil mammals, XVII. 166.
 Macroura, tribe of crustacea, VII. 541.
 Macrouridae, or Macrourids, family of fishes, XII. 270.
 Macrourus, genus of fishes, XII. 270.
 MacSniachain, Dun, vitrified fort, IX. 790.
 Mactra, genus of mollusks, XV. 350, 347.
 Mactridae, family of mollusks, XV. 350.
 M'William on dry rot, VIII. 207.
 MADAGASCAR, XIII. 790; II. 229—oporynids of, XVII. 637—malagasi of, IX. 347—land leech of, XI. 302, *n.*—reptiles, XIX. 53—ordeal poison of, V. 199.
 Madai, VIII. 45.
 MADDALONI, town in Italy, XIII. 796.
 Madden on the vegetation of the Himalayas, V. 226.
 ——— (Sir Frederick), on Shakspeare, XX. 70, *n.* 1.
 Madder, XIII. 796; VIII. 282, 288, 291, 317—in the Ionian Islands, XII. 445—its culture in Greece, XI. 16; France, X. 248.
 ——— order of plants, V. 191.
 Madeira (General), V. 287.
 ——— island, XIII. 796—temperature of, IV. 184—weights and measures of, XXI. 812—wine, 887, 889, 890—map of, II. Plate.
 ——— river, XIII. 801; V. 291; XVII. 604; XVIII. 382.
 MADEIRAS (The), XIII. 796; II. 229.
 Madia oil, XVI. 495.
 MADISON, city in Wisconsin, XIII. 802.
 ——— in Indiana, XIII. 802.
 ——— (JAMES), president of United States, XIII. 802.
 Madness. See Mental Diseases, Insanity.
 Madocks (W. A.), his embanking enterprise in Wales, VIII. 647.
 MADRAS, XIII. 802; XI. 463—transactions at, in 1795, 501—judicature at, 525—operations of the army of, in suppressing the Sepoy revolt, XVI. 312.
 ——— College, St Andrews, III. 136.
 ——— kind of handkerchief, VI. 93.
 Madreporearia, stony corals, XXI. 1005.
 Madreporidae, XXI. 1005.
 MADRID, XIII. 804—Academies of Painting and History at, II. 68, 69—Royal Spanish Academy at, 71—libraries at, XIII. 409—meteorological observations at, XIV. 688—insurrection at, in 1822, XX. 476; insurrections at, in 1854, 1856, 483—porcelain manufacture at, 490—painting at, 494.
 MADRIDEJOS, town in Spain, XIII. 806.
 MADRIGAL, XIII. 806.
 Mad Stagers, XXI. 575.

MAD—MAG

MADURA, in Hindustan, XIII. 806, 804.
— island, XIII. 806; XII. 702, 709—
trade with Sumatra, XX. 806.
MAEANDER, river, XIII. 806.
MÆCENAS (Caius Clinius), XIII. 806; XIX.
333—his patronage of Horace, XI. 627;
of Virgil, XXI. 594; Virgil's Georgics
suggested by, ib.
MAELSTROM, XIII. 807; XVI. 319.
Maelzel (J. N.), inventor of the metro-
nome and other instruments, XIV. 695.
Maena, genus of fishes, XII. 288.
Maenidae, or **Maenoids**, family of fishes,
XII. 287, 288.
Maenuphthes, XI. 389.
MÆOTIS, Palus or Lacus, XIII. 807; IV.
334.
MAESTLIN (Michael), XIII. 807.
MAESTRICHT, town in Holland, XIII. 807
—chalk, XV. 211—population, XI. 582.
MAFFEI (F. Scipione, Marquis), poet, XIII.
808—ascending thunderbolt seen by,
VIII. 583—his Verona Illustrata, XVII.
213.
— (John Peter), his Life of Loyola,
XII. 749—early notice of tea by, XXI.
88.
MAGADOXO, Arabian town, XIII. 808.
MAGALHAENS, or **Magellan** (Fernando),
XIII. 808; XVII. 336—his circumnavi-
gation, X. 472—his discovery of the La-
drone Islands, XIII. 150.
Magars, Nepalese tribe, XVI. 144.
Magatus (Cæsar), XX. 818.
Magazine, Blackwood's. See **Blackwood's**
Magazine.
— Gentleman's, VI. 350.
Magdalen College, Oxford, XVII. 35; XXI.
459—Cambridge, 466.
MAGDALENA, river, XIII. 809; XVII. 647.
— department of New Granada, X.
797.
MAGDEBURG, XIII. 809—Tilly's siege of,
XX. 849—Magdeburg experiment, in
pneumatics, IV. 452.
MAGELLAN, or **Magalhaens** (Strait of), XIII.
809—temperature of the climate, II.
673.
Magellan's barometer, IV. 455.
MAGENDIE's (François), XIII. 809—on the
veins, II. 792, 793, 794—on the nerves
of motion and sensation, 814—on ex-
halants, 803—his dietetic experiments,
VIII. 18—on gravel, 24.
Magenta, battle of, in 1859, XIX. 644.
MAGGI (Jerome), XIII. 810.
MAGGIORE (Lago), XIII. 810. See **Lago**
Maggiore.
Maggot, cheese maggot, IX. 254—used for
bait, III. 155—in sheep, XXI. 579.
MAGI, XIII. 810; XIV. 421.
Magie, of the Druids, VIII. 189—as prac-
tised in Egypt, 443.
— disc, XVI. 697.
— lantern, XVI. 696.
— SQUARE, XIII. 810; I. 704.
Magicians, persecution of, by Valens, VII.
309.
Magilus, genus of mollusks, XV. 383.
Maginán, his account of a remarkable
cloud, VII. 39.
MAGINN (William, LL.D.), XIII. 811.
Maginus's burning-mirror, VI. 10.
Magiotti (Raphael), on hydraulics, XII. 70.
Magistrates, the Economists on, VIII. 380.
MAGLIABECCHI (Antonio), XIII. 811.
Magliabecchian Library, XIII. 415; IX.
666.
Magna Charta, VI. 426; VIII. 677, 770—
of Hungary, XI. 12.
— GRÆCIA, XIII. 811; XX. 256.
Magnanimity, I. 423.
Magne-crystalline force, I. 981.
Magne-optic force, I. 981.
MAGNENTIUS, Roman emperor, XIII. 811;
V. 380; VII. 303.
MAGNES, comic poet, XIII. 812.
MAGNESIA, city of Iona, XIII. 812—in
chemistry, VI. 487; XV. 65—in the
composition of the earth's crust, XVII.
619—in plants, II. 388—as an ingredient
in limestone injurious to vegetation,
XVII. 620.

MAG—MAH

Magnesia-alum, XV. 97.
Magnesian limestone, XV. 145, 148, 205—
fossil fishes of, XII. 348, 349—lace-coral
fossils of, XVII. 98—as building stone,
XX. 712—Tennant on, XXI. 153.
Magnetite, mineral, XV. 92.
Magnesium, VI. 487.
Magnet, influence of, on all bodies, I. 980
—Gilbert on, 570—artificial, XIV. 5, 6—
method of making, 68—attraction and
repulsion of, 20, 21—power of, to
communicate magnetism to other bodies,
21—polarity of, 20—reaction of iron on,
21—distribution of magnetism in arti-
ficial, 22—effects produced by breaking,
24—mutual action of, 44—arming and
preserving, 74—electro-magnets, ib.—
supposed origin of the name, 266
—employment of, in curing diseases,
XX. 414—shock from, XXI. 646—
Ampère's rotatory magnet, 639—Dr
Knight's experiments with, 646.
Magnetic iron ore, VI. 490; XV. 107.
— pyrites, XV. 115.
Magnetical Observatory, Dublin, VIII. 223.
Magnetite, mineral, XV. 107.
MAGNETISM, XIV. 1; I. 740, 990; XVII.
617—Robison's writings on, I. 872—
optical changes induced by, 981—phe-
nomena, origin, and history of, 740
et seq.—recent history of terrestrial,
801, 990; Gauss's mathematical theory
of, 990—magnetic intensity, 991—vari-
ations of magnetic elements, 992—
magnetic storms, ib.—British magneti-
cal expeditions, 995—European mag-
netical observations, 996—Æpinus on,
II. 164—Biot and Gay-Lussac's observa-
tions in a balloon, 182, 184—magnetic
property of aurora borealis, IV. 247,
249—Cavallio on, VI. 345, 346—Coulomb
on, VII. 462—464—magnetic effects of
electricity, VIII. 599—used to produce
mechanical energy, XIV. 418—of mi-
nerals, XV. 60—connection between it
and electricity, I. 800—electro-magnet-
ism, 973; VIII. 531, 600—magnetic
influence of the solar rays, XVI. 595—
magnetic storms, XVII. 618—influence
of the earth's magnetism on the pen-
dulum of clocks, 388—rotation produced
by the earth's, XXI. 639. See **Voltaic**
Electricity, **Compass**.
— (Animal), XX. 413—Bailly's report
on, IV. 374; XX. 419.
Magneto-electricity, I. 979; VIII. 532,
600; XXI. 644—magneto-electric ap-
paratus, 646.
Magnetometers, XIV. 82, 83.
Magnificent, ship, her dangerous position,
and preservation from, XX. 19.
Magnifying power, I. 839—of microscopes,
XXI. 128—of single microscopes, XIV.
771—used in astronomy, I. 839—its
limits, ib.
Magnitude, our ideas of, relative, IX. 122
—perception of, XIV. 565.
Magnolia, XVII. 761.
Magnoliaceæ, nat. order of plants, V. 180
—region of, 227; XVII. 627.
MAGNUS (St), bay of, XIV. 92.
— (St), Cathedral of, XIII. 102.
— (Prof.), on the motion of fluids,
XII. 76—experiments on, 154, 155—on
the water-bellows, 183—on the expan-
sive force of steam, XX. 558.
Mago, Carthaginian generals of that
name, VI. 283, 295, 296.
Magog, VIII. 45; X. 460, n., 701.
MAGONTIACUM, XIV. 92.
Magot, or **Barbary ape**, XIV. 141.
Magpies, XVI. 764.
Magrebians, Alexandria taken by the, II.
471.
Maguay, culture of, in Mexico, XIV. 717.
Magyars, in Hungary, XII. 10; IV. 318.
Maha Bandoola, Burmese leader, V. 784.
Maha-welli-ganga, river, XXI. 351; VI.
391.
MAHABALIPURAM, in Hindustan, XIV. 92.
MAHABULESWA, in Hindustan, XIV. 92.
MAHANUDDY, river, XIV. 92.
MAHARAJPOOR, in Hindustan, XIV. 92.

MAH—MAI

Mahavilla-Ganga, river in Ceylon, VI. 391.
MAHE, in Hindustan, XIV. 93.
— island, XIV. 364; XX. 68.
Maherbal, VI. 295.
MAHIM, in Hindustan, XIV. 93.
Mahmoodeeyeh Canal, VIII. 494.
Mahmoud's Indian conquests, III. 744;
IX. 478.
MAHMUD I., sultan, XIV. 93; XXI. 370.
— II., sultan, XIV. 93; XXI. 373.
— king of Persia, XVII. 439.
MAHOGANY, XIV. 93; XI. 610, 612; V.
187—specific gravity of, XII. 89—its use
in joinery, 817—in Hayti, XI. 254—as
timber, XXI. 277—ship built of, ib.
— order of plants, V. 187.
MAHOMET, or **Mohammed I.**, XIV. 94;
XXI. 368.
— II., sultan, XIV. 94; XXI. 368.
— III., XIV. 94; XXI. 369.
— IV., sultan, XIV. 94; XXI. 370.
Mahometan power in Asia, III. 743.
MAHOMETANISM, XIV. 94. See **Moham-**
medanism.
Mahommed Abulwafa, II. 483.
— Ben-Musa, II. 483.
Mahommedan year, VI. 79, 673.
Mahommedans. See **Mohammedans**.
Mahon, Port, in Minorca, XV. 251.
Mahra, in Arabia, III. 341, 359.
MAHRATTAS, XIV. 94; XI. 464, 491—rise
and progress of their power, 478, 479
—their war with the Afghans, 481—
Wellington's operations against, XXI.
819.
MAI (Angelo), XIV. 95—Cicero's treatise
De Republica discovered by, VI. 721;
XIII. 411—fragments of the Theodosian
code discovered by, VI. 741—his re-
searches among palimpsests, XIII. 413;
XVII. 207—works of Tronto discovered
by, X. 316—part of an oration of Isæus
discovered by, XII. 624.
MAI-MAITCHIN, XIV. 97. See **Kiachti**.
MAIANO (Benedetto da), XIV. 96.
MAIDA, town of Naples, XIV. 96—battle
of, V. 602; XX. 241.
MAIDEN, an instrument for beheading,
XIV. 96, 445; IV. 591; XI. 88; VIII.
391, 392.
Maiden-hair, fern, V. 216; II. 141.
MAIDENHEAD, in Berks, XIV. 97.
Maid of honour, XI. 776.
MAIDSTONE, XIV. 97—population of, XIII.
67—its culture of nuts, XI. 717.
— (Mr.), on the character of Crom-
well, VII. 515 and n. 1.
Mail coaches, VII. 43—system of posting
by, XVIII. 407, 408, 415—robberies of,
407.
— coat of, VII. 45.
Mailed cheeks, family of fishes, XII. 279.
MAILLE (J. A. M. de Moyriac de), XIV. 97
—his History of China, VI. 559, 577,
585.
Mailard (Stanislaus), X. 56.
Maillet (M.), on the transportation of bee-
hives in Egypt, IV. 587.
Mails, conveyance of, XVIII. 415—ocean
mail systems of different countries,
425; of Great Britain, 426.
MAIMBOURG (Louis), Jesuit, XIV. 97.
MAIMONIDES, Jewish rabbi, XIV. 97—his
digest of the Talmud, XXI. 16.
MAIN, or **MAINE**, river, XIV. 98; IV. 517.
— (Rev. Robert), on the planet Sa-
turn, IV. 92.
MAINE, State of, XIV. 98; XXI. 419—
debt of, 428—wines of, 888.
— French province, XIV. 99; X. 277.
— DE BIRAN (F. P. Gonthier), XIV.
99.
MAINE-ET-LOIRE, XIV. 99.
Maineduc (M.), mesmerist, XX. 431.
Mainland, one of the Shetland islands,
XVIII. 285; XX. 113.
Mainots, XI. 14.
Mainspring of a watch, VII. 27.
MAINTENON (Madame de), XIV. 100.
— aqueduct of, III. 336.
Mainwaring (Dr), prosecuted by Charles
I., V. 392.
Maio, Cape Verde Island, XXI. 545.

MAI—MAL

Mahr (John), on book-keeping, V. 15.
— (John), on logic, XIV. 102; XIII.
585.
Maire, on the degree, IX. 550.
— (Jacob le), navigator, XVII. 366.
MAIRWARRA, in Hindustan, XIV. 100.
MAISTRE (Louis Isaac le), XIV. 100. See
Sacy.
— (COUNT JOSEPH MAIRE DE), XIV.
100.
Maitland Club, X. 652.
— (Mr), his character of Hector Boyce,
V. 254.
— on public libraries, XIII. 400.
— (Sir RICHARD), XIV. 101.
— (Sir William), of Lethington, XIX.
782 *et seq.*
Maittaire (Michael), on early printed
books, IV. 708.
MAIZE, or **Indian corn**, XIV. 101; V. 215;
XVII. 630—analysis of, IX. 759—cul-
ture of, II. 313—in Bengal, IV. 649;
Lombardy, XIII. 654; France, X. 247;
Mexico, XIV. 716—quantity imported,
VII. 400.
MAJESTY, XIV. 102.
Majolica, Italian enamelled ware, XVIII.
432—mezza-majolica, ib.
MAJOR, XIV. 102.
— and **Minor**, in music, XIV. 102.
— or **MAIR** (John), XIV. 102; XIII.
585, n.—on blind Harry, the minstrel,
XI. 234.
MAJORCA, island, XIV. 102—weights and
measures of, XXI. 812.
Majuli, III. 763.
Makaira, genus of fishes, XII. 297.
MAKALLAH, or **Macullah**, town in Arabia,
XIV. 103.
Makerstoun, meteorological observations
at, XIV. 688.
Makhailovitch (Alexei), XIX. 475.
Maklin (F. W.), his work on insects, IX.
24.
MAKO, Hungarian town, XIV. 103.
MAKRI, in Asiatic Turkey, XIV. 103.
MALABAR, XIV. 103—teak wood of, XXI.
276, 277.
— POINT, XIV. 105.
Malabathrum, its supposed identity with
tea, XXI. 88.
Malacanthus, genus of fishes, XII. 267.
MALACCA, XIV. 105, 106; III. 735; XVIII.
382—tin mines of, XV. 340—timber
trees of, XX. 173—weights and mea-
sures, XXI. 812.
MALACHI, prophet, XIV. 106.
Malachite, mineral, VI. 496; XV. 102;
XVII. 621.
Malachius, genus of insects, IX. 111.
Malacodermi, section of insects, IX. 106.
Malacolite, mineral, XV. 81.
Malacology, XV. 319.
Malacopteri, order of fishes, XII. 231.
Malacopterous fishes, XII. 229—abdomi-
nals, 235.
Malacopterygii, sub-order of fishes, XII.
264.
Malacosteus, genus of fishes, XII. 248.
Malacostraca, fossil, XVII. 100, 102.
MALAGA, town in Spain, XIV. 107—raisins
of, XVIII. 799—insurrection at, in 1836,
XX. 479—wine, 489.
Malagasy, XIII. 794.
MALAGRIDA (Gabriel), XIV. 108.
Malagueta coast, XI. 89.
Malakoff Tower, Sebastopol, IX. 826; XIX.
509, 510.
Malakon, mineral, XV. 87.
Malamide, VI. 518.
Malam's gas-purifier, X. 417.
Malan (Cæsar), his hymns, XII. 190.
Malapterurus, genus of fishes, XII. 263.
— electricus, XII. 260.
Malapterus, genus of fishes, XII. 267.
MALAR, Swedish lake, XIV. 108; XX. 861.
— bone, human, III. 22.
Malaria, in Greece, XI. 14—in the Cam-
pagna di Roma, VI. 123—in Sardinia
XIX. 635.
Malay language, XIII. 207.
— PENINSULA, XIV. See **Malacca**.
Malays, II. 776; III. 749; XIV. 106—in

MAL—MAL

- Celebes, VI. 361—Amboyna, II. 660—Borneo, V. 48—Malacca, XIV. 105; their practice of "running amok," *ib.*—Cape of Good Hope, X. 714—Sumatra, XX. 805.
- Malbrouc, in zoology, XIV. 140.
- Malcohas, genus of birds, XVI. 778.
- MALCOLM (Sir John), XIV. 108—his account of Madhaje Scindia, XI. 167—on the character of the Asiatics, III. 749—on castes among the Persians, VI. 315—his administration in India, XI. 508—his proceedings in Malwah, XIV. 120—his account of Persia, XVII. 422 *et seq.*—Scottish kings of that name, XIX. 745 *et seq.*, 752.
- MALCZEWSKI (Antoni), Polish poet, XIV. 108.
- MALDA, town in Hindustan, XIV. 109.
- Malden (Mr), on universities, XXI. 444, 450, 451, 454, *n.*
- MALDIVE ISLANDS, XIV. 109; XVII. 583—language of, XIII. 207.
- MALDON, town in Essex, XIV. 109.
- MALDONADO, town in Uruguay, XIV. 109.
- MALEBRANCHE (Nicolas), XIV. 109—on the secondary qualities of bodies, I. 63—on the sensations produced by objects, and the judgment thereupon formed, 64, 65—his assertion that mistaken judgments relative to the objects of sense result from original sin, 65—cause of his studying philosophy, 74—his work, *The Search after Truth*, *ib.*—his genius, *ib.*, 75—blends theology and metaphysics, 74, 75—his controversies on grace, 74—a bold and free inquirer when treating of subjects purely philosophical, 75—his sagacious observations on sorcery, *ib.*—on men and manners, 76—his character, 77—developed the fundamental principles of Hartley, *ib.*—on the formation of habits, *ib.*—on cause and effect, 78—objections of Leibnitz to his principles, 78, 79—reasons which led him to conclude that we see all things in God, 79—coincides with some Hindu philosophers, *ib.*—his resemblance to, and interview with Berkeley, 79, 80—Warburton's opinion of, 80, *n.* 2—anticipated some of the metaphysical reasonings of Berkeley, 167—his advance towards the true theory of vision, 168—his belief in the Cartesian system regarding the soul, 181—on the love of universal order, 335—was the first who taught that virtue consists in pure intentions, 356—on religious society and established church, *ib.*
- Males, mortality of, greater than in females, III. 230.
- MALESHERBES (C. G. de L. de), XIV. 110; X. 74 *et seq.*
- MALHERBE (François de), XIV. 111—poetry of, XVIII. 116.
- Malic acid, VI. 515; IX. 758.
- Malik Shah, king of Persia, XVII. 437.
- Malinouzky (Von), his work on insects, IX. 11.
- Malleable metals, VI. 482—iron, XII. 570—conversion of crude into malleable iron, XII. 552—alleged malleability of glass, X. 658.
- Mallenders in the horse, XXI. 578.
- Mallet (David), XIV. 111; XXI. 235—his epitaph on Alkman, II. 429—his allusion to Burman, V. 789.
- (Edouart), on the population of Geneva, XV. 621, 634.
- (Mr), his mortar, XI. 141.
- (M.), on hydraulics, XII. 74.
- (PAUL HENRI), XIV. 111.
- MALLET-PREVOST (Henri), XIV. 112.
- MALLET-DUPAN (Jacques), XIV. 112.
- Mallett (Mr), on the elevation of land in South America, XV. 167 and *n.* 1.
- Malleus, tympanal bone, III. 46.
- genus of mollusks, XV. 348.
- MALLICOLLO, island, XIV. 112; IV. 265, 266.
- Mallinkrot on the invention of printing, IV. 706.
- Mallodoo in Borneo, V. 47.

MAL—MAM

- Mallota, genus of insects, IX. 241.
- Mallotus, genus of fishes, XII. 245—fossil, 347.
- MALLOW, town in Cork, XIV. 112—thermal spring of, VII. 372.
- order of plants, V. 184.
- MALMEDY, Prussian town, XIV. 112.
- MALMESBURY (William of), historian, XIV. 112.
- town in Wilts, XIV. 112.
- MALMÖ, Swedish town, XIV. 113.
- Malmsey wine, XXI. 885.
- MALO (St), French seaport, XIV. 113; XII. 361.
- (C.), his work on insects, XI. 11.
- Malojaroslawitz, battle of, X. 158.
- MALONE (Edmund), XIV. 113—on the baronets of Nova Scotia, IV. 470—on Shakspeare, XX. 70, 71, 74 *et seq.*
- MALPAS, town in Cheshire, XIV. 113.
- MALPIGHI (Marcello), XIV. 113, 460—his anatomical discoveries, II. 762—on fat, 788—on the bones, 826—on the glands, 833—on the seat of colour in the skin, VII. 223—his works on insects, IX. 3—on the structure of the teeth, XVI. 409.
- Malpighiaceæ, nat. order of plants, V. 186.
- Malplaquet, battle of, V. 451; IX. 369.
- MALT, XIV. 114; V. 320; VIII. 48, 731—quantity used in Great Britain and Ireland, V. 321; by the London breweries, 324—analysis of, *ib.*—duty on, 321—consumption of, in England, VIII. 731; Scotland, XIX. 806—malting, V. 321—malt-kilns, 323; XVIII. 80—excise duties on, XXI. 59.
- Malt-dust, as manure, II. 406.
- Malt-liquors, adulteration of, XIV. 441.
- See Ale, Beer, Porter.
- MALTA, XIV. 114—Lord Nelson on the importance of, V. 586—disposal of, by the treaty of Amiens, 587, 589—renewal of war with France on account of, 592, 595—destructive cloud in, VII. 39—taken by Bonaparte, X. 109—retained from him, 127—language, XIII. 210; IX. 390—restored to the Knights of St John, XIX. 491—weights and measures, XXI. 812.
- Knights of, XIII. 115, 122—ladies admitted into the order, 112—suppression of the order by Henry VIII, VIII. 705.
- MALTE-BRUN, XIV. 117. See Brun.
- Malthæa, genus of fishes, XII. 311, 312.
- Malthinus, genus of insects, IX. 110.
- MALTHUS (Thomas Robert), XIV. 117—his theory of population, VII. 137; XIV. 441; XVIII. 346, 347—on bounties on corn, VII. 379—on wealth, XVIII. 211—on manufactures, 238—on the distinction between agricultural and manufacturing industry, 246—his article on Population, in this work, 338, *n.* 1.
- Malting, V. 321.
- MALTON, in Yorkshire, XIV. 118.
- Maltsters' rate of license, XIII. 435.
- MALUS (Etienne Louis), XIV. 118; I. 901—on chromatics, VI. 652 *et seq.*—on polarisation of light, I. 754, 902; II. 101; XIII. 453; XVI. 537, 634, 635—his other investigations and character, I. 902, 903—on depolarisation of light, 902.
- Malvaceæ, nat. order of plants, V. 184.
- Malvasia (Marquis of), his micrometer, XIV. 743.
- MALVERN, in Worcestershire, XIV. 119—mineral springs at, XXI. 928—railway to, *ib.*
- Hills, XXI. 928.
- MALVOISIN (William de), XIV. 119.
- MALWAH, in Hindustan, XIV. 120—opium of, XI. 453.
- MAMERS, French town, XIV. 120.
- Mamertine caves, XVIII. 565—prison, XIX. 358.
- Mamertines, VI. 287—Hiero's war with, IX. 900.
- Mamillipora, fossil sponges, XVII. 93.
- Mamlukes, their sway in Egypt, VIII. 483 *et seq.*; in Palestine, XVII. 197—Mohammad' Alec's massacre of the, VIII. 492, 493.

MAM—MAN

- Mammæ, III. 72.
- MAMMALIA, XIV. 121—characteristics of, II. 773, 774—sub-division of, 774—their blood-globules, 779—their bones, III. 74, 75—muscles, 91—organs of smell, 94—eyes, 95—ears, 98—tongue, 100—teeth, 105; XVI. 438—their value in classification, 477—without teeth, 438—organs of voice, III. 101—nervous system, 103—œsophagus and stomach, 108—intestines, 110—organs of circulation, 112—lungs, *ib.*—secretory organs, 113—reproductive organs, *ib.*—luminosity of the flesh of, during decomposition, XIII. 457—order of their appearance in the strata of the earth, XVII. 92—fossil, 156—number known, 631—distribution of, 631; of Africa, II. 217; of North America, 712.
- Mammoth, XVII. 168—dentition of, XVI. 474, 475.
- Mammoth-cave, Kentucky, XIII. 69—blind fish in, XII. 236—blind insects, XVII. 630.
- MAN, XIV. 242—his first instruction superhuman, I. 452—original complexion of, II. 121—did the race spring from one stock? *ib.*; VI. 364—brain of (see Brain)—senses of, more equally balanced than in brutes, III. 178—American races, II. 676—Asiatic, III. 747—effect of climate on his active energies, II. 683—complexion, VII. 222—his stature, II. 691—anatomy, 771—weight of, and of his individual organs, III. 2, 3—attitude and gestures, 40, 41—soul, 172, 176—his senses compared with those of brutes, 175, 176; XII. 391—character of the Asiatics, III. 749—varieties of man, II. 775; V. 373; XI. 541—races of, IX. 341—wherein different from brutes, V. 700—is he naturally carnivorous? VI. 244—daily labour of, VII. 464—dispersion of, VIII. 44; XVII. 536—if left to himself could never raise himself from a savage to a civilised state, I. 449, 450—Lord Kaimes, Rousseau, and Dr Doig on the savage state, VIII. 90, 91—measurement of the human body, 172—its electricity, 571—effects of electricity on it, 601, 603—not the only animal that preys on its own kind, IX. 91—whether endowed with instincts, XII. 392—his position in zoological systems, XIV. 126, 128, 135; IX. 342—mechanical power of, XIV. 416, 417—his duties, to himself, XV. 565; to his fellow-creatures, 566; to God, 570—do the different varieties of the race constitute species? IX. 353, 354—his structure indicates him to be omnivorous, 768—geological date of his creation unknown, XI. 540—intermixture of races and languages, XIII. 195—original unity of the families of, XVII. 536, 641—his antehistorical condition and belief illustrated by philology, 537—quantity of food required by, 658—size of the Patagonians, 335—Pritchard's Physical History of, XVIII. 512—original state of, XXI. 196—his temptation and fall, 197—source of his sinfulness, 201; consequences of, 207—the Holy Spirit's work in, 218. See Anatomy, Ethnology, Physiology, &c.
- (ISLE OF), XIV. 242—deemsters of, VII. 693—yield of its lead-mines, XV. 246—language of, IX. 393.
- Man-eaters, III. 269. See Cannibalism.
- Man-machine, in mining, XV. 229.
- MANAAR, island, XIV. 249.
- MANACOR, town in Majorca, XIV. 249.
- MANAGUA, Lake of, in Nicaragua, XIV. 249; XVI. 242.
- MANAH, in Hindustan, XIV. 249.
- Manakins, birds, XVI. 757.
- Manatee, cetaceous animal, XIV. 217—jaws and teeth of, XVI. 446, 447.
- river, XI. 609.
- Manatus, genus of mammalia, XIV. 218; XVI. 446.
- MANAYUNK, in Pennsylvania, XIV. 249.
- Manby (Captain), his apparatus for saving the shipwrecked, XIII. 441.

MAN—MAN

- MANCHA (La), in Spain, XIV. 249.
- MANCHE (La), in France, XIV. 249.
- MANCHESTER, XIV. 250—and Liverpool Railway, I. 885—an ancient name for, II. 458—massacre there in 1819, V. 623—cotton manufacture, VII. 440—origin and progress of its manufactures, XIII. 178—notice of, in early times, XIV. 284—water-works, XII. 141—free library, XIII. 405—mortality, XV. 614—Duke of Bridgewater's Canal, V. 367; VI. 529—canals connected with, XIII. 179—police of, XVIII. 197—lectures at the Mechanics' Institution, XV. 824—early newspapers of, XVI. 186; during the American war, 187—post-office statistics, XVIII. 416—roof of the engine-house, Manchester station, XIX. 397—savings-bank, 668—rule for estimating horse-power in steam-engines, XX. 602.
- in New Hampshire, XIV. 260.
- MANCHOORIA, in Asia, XIV. 260.
- Manco Capac, I. 450; II. 687; III. 128; IV. 822; XV. 767; XVII. 460.
- Mandane, VII. 612.
- MANDAR (Michel Philippe), revolutionist, XIV. 260.
- MANDARA, in Africa, XIV. 261.
- Mandats, French paper currency, X. 99.
- MANDAVEE, in Hindustan, XIV. 261.
- Mandelslo, on the use of tea in Japan, XXI. 89.
- MANDEVILLE (Bernard de), XIV. 261—his ethical doctrines, XV. 553 and *n.* 2.
- (Sir JOHN DE), XIV. 262.
- Mandibles, of bees, IV. 571—of birds, III. 85—of insects, IX. 32—of spiders, III. 373—of myriapods, XV. 747.
- MANDING, or Mandingo, in Africa, XIV. 262; II. 221—people of, IX. 352; XX. 50—language of, XIII. 226, 227.
- Mandragora, plant, VI. 632.
- Mandrake, V. 202.
- Mandrills, in zoology, XIV. 141—teeth of, XVI. 456.
- Mandshuria, in Asia, XIV. 260.
- Manducation of fishes, XII. 231.
- MANES, XIV. 262, 264.
- MANETHO, XIV. 262; XI. 368, 369, 410—on Egyptian history, VIII. 422 *et seq.*—two authors of that name, 452.
- Manetti, biographer of Dante, VII. 648.
- MANFREDI (Eustacio), XIV. 263; I. 715, *n.* 1—on differential equations, 715—his burning-mirror, VI. 10.
- king of the Two Sicilies, XIV. 262; XX. 257, 263.
- MANFREDONIA, XIV. 263; XX. 242.
- MANGALORE, XIV. 263.
- Manganese, VI. 490; XV. 66—spar, 82—cupreous, 112—localities for, 246—black oxide of, IV. 761—red, XV. 100—ores of, in Derbyshire, VII. 755—Devonshire, 763—distribution of, XVII. 622.
- ores, XV. 111.
- Manganese-epidote, XV. 85.
- Manganic acid, VI. 490.
- Manganite, mineral, XV. 111.
- Manganocalcite, mineral, XV. 100.
- Mangareva islands, XVIII. 282.
- Mange, a disease in animals, XII. 663; XXI. 578.
- Mangedava, in Borneo, V. 47.
- Mangel-wurzel, XX. 796—culture of, II. 319; IV. 589—storing of, II. 320. See Beet.
- Mangle (Prof.), on the marmot, XII. 62.
- Mangle, VI. 90.
- Mango, fish, XI. 456, 619.
- fruit, V. 190—tree, in Brazil, 293; India, XI. 454; in Sumatra, XX. 804.
- Mangolia, III. 731, 732.
- Mangosteen, fruit, XVII. 626; XX. 804.
- Mangouste, in zoology, XIV. 167.
- Mangrove order of plants, V. 619, 191.
- tree, V. 77.
- Manhattan, island, XVI. 213.
- Manheim, XIV. 267.
- Mania, XIV. 529, 426.
- MANICA, in Africa, XIV. 264.
- MANICHEISM, XIV. 264.

MAN—MAN

- Manicola, island, XIV. 112.
 Manifesto, VIII. 41.
 Mánikpúr, city in Oude, XVII. 17.
 MANILIUS (Marcus or Caius), poet, XIV. 265—Bentley's edition of, IV. 660—Sherburne's version of, XX. 106.
 MANILLA, XIV. 265; XIII. 743; XVII. 513—captured by the British, V. 466—sugar, XX. 796—tobacco, XXI. 294.
 —hemp, XI. 311, 313; XXI. 782.
 Manioc, V. 206; VI. 313; XIV. 716.
 Manis, genus of mammalia, XIV. 192; XVII. 631.
 MANISA, town of Asia Minor, XIV. 266.
 MANLI, Roman family, XIV. 266.
 MANLIUS (Cneius Vulso), XIV. 266.
 —(MARCUS CAPITOLINUS), XIV. 266; XIX. 302, 303.
 —(TITUS I. TORQUATUS), XIV. 266; XIX. 303—filial piety of his son, IX. 577.
 —(TITUS TORQUATUS), XIV. 266.
 Mann (Horace), on the proportion of children that should attend school, VIII. 746—on education in Prussia, XV. 817.
 MANNA, XIV. 266; V. 199; VIII. 47; IX. 168; XVII. 421.
 Manner, an index of disposition and character, I. 411.
 Mannerheim (C. G.), his works on insects, IX. 15, 23.
 MANNERT (Conrad), XIV. 267.
 MANNHEIM, XIV. 267—Academy of Sciences at, II. 67.
 Manning of the navy, XVI. 106.
 —(Mr), his attempts to enter China, VI. 557.
 Mannite, V. 73.
 MANNING, or Manning (Robert), XIV. 268; XIX. 267—quotation from, VIII. 795.
 Manometer, IV. 456; XX. 560.
 Manon, fossil sponges, XVII. 93.
 MANRESA, Spanish town, XIV. 268.
 Manrique (Jorge), poetry of, XVIII. 113.
 MANS (Le), French town, XIV. 268.
 Mansarde roofs, XIX. 383.
 MANSAROWAR, lake, XIV. 269.
 MANSART (François), XIV. 269.
 —(JULES HARDOUIN), XIV. 269.
 Mansel (Mr), on logic, XIII. 571 *n.*, *et seq.*
 —(Sir Robert), his expedition against Algiers, II. 569.
 MANSFIELD, in Nottingham, XIV. 269.
 —(Lord.) See Murray (William).
 Mansion-House, London, XIII. 677.
 Manslaughter, XI. 604.
 MANSURAH, in Lower Egypt, XIV. 269.
 MANT (Richard, D.D.), XIV. 269.
 MANTEGNA (Andrea), painter, XIV. 269; XVII. 72.
 MANTELL (Gideon Algernon), geologist, XIV. 270—on the geology of Surrey, XX. 836.
 MANTES, or Mantz, French town, XIV. 270—bridge at, VI. 381.
 Manticora, genus of insects, IX. 78.
 MANTINEIA, XIV. 270—battle of, III. 628; XXI. 178—war with Sparta, XX. 502.
 Mantis, genus of insects, IX. 156.
 Mantispa, genus of insects, IX. 179.
 Mantius on surgical dressings, XX. 811.
 Mantle, in mollusks, XV. 344.
 Mantlings, in heraldry, XI. 337.
 Mantshurians, language of, XIII. 217.
 MANTUA, XIV. 271—Bonaparte's siege of, X. 103, 105; XV. 787—surrendered to the French, 790—school of painting, XVII. 72.
 Mantzichiarta, VII. 315.
 Manua, island, XVIII. 277.
 MANUEL (Jacques Antoine), XIV. 271; X. 185.
 —I., Comnenus, emperor of Constantinople, XIV. 272.
 —II., Palæologus, XIV. 272; VII. 320.
 Manufactories, nuisance from, XIV. 427.
 Manufacturers, their unfounded expectations from the repeal of the corn-laws, VII. 392—duty of the masters, XIV. 280.

MAN—MAR

- MANUFACTURES, XIV. 272—effect of subdivision of land on, VII. 429—improved by the Crusades, 534—employment of capital in, XVIII. 236—not productive of increased mortality, 238—distinguished from agriculture and commerce, 246—of hair, XI. 183—value of exports from Britain to the countries bordering on the Mediterranean, XIV. 470—of England, VII. 190; VIII. 728—Denmark, 747; Greece, XI. 17; India, 458; France, X. 251; of modern Egypt, VIII. 447; New York, XVI. 219, 226; Russia, XIX. 544—Sheffield, XX. 96—Sweden, 862—United States, XXI. 426. See other countries.
 Manufacturing system of political economy, XVIII. 214.
 Manures, II. 294—application of, V. 98—their chemical composition and mode of action, II. 401—vegetable, 405—mineral, 412—animal, 407—artificial, 305—liquid, 294, 297, 405; analysis of, 405—portable, 264—special, V. 99—farm-yard, II. 401; V. 99; VI. 524; analysis of, II. 403—adulteration of, 299—for gardens, XI. 701—management of, in Lombardy, XIII. 649—carefully collected in China, VI. 588—manure-distributor, II. 275.
 Manuscripts, where ancient MSS. may be supposed to exist, XIII. 383—researches for, 384—MSS. in the British Museum, 391; at Oxford, 396; Cambridge, 398; Edinburgh, 401, 402; Aberdeen, 403; Dublin, 404; Paris, 407, 408; Madrid, 409; Rome, 411; Bologna, 413; Florence, 414, 415; Vienna, 417; Dresden, 419; Berlin, 420; of the Scriptures, 837. See Libraries, Palimpsests, Papyri.
 MANUZIO (Aldo Pio), printer, XIV. 292—his accuracy, XVIII. 542—italic type invented by, 533, *n.*
 —(Aldo), junior, his friendship to Crichton, VII. 498.
 —(PAOLO), XIV. 292.
 MANZANARES, town in Spain, XIV. 292.
 Manzoni, his romance, XIX. 284.
 Maori, native population of New Zealand, XVI. 237; IV. 267.
 MAPES (Walter), XIV. 293.
 Maple, order of plants, V. 186.
 —sugar, tree, V. 138, 186; XVII. 762—sugar, XX. 796, 798.
 —trees, XVII. 759, 761—as timber, XXI. 278—specific gravity of the wood, XII. 89.
 Maps, D'Anville's improvements on, III. 289—for the blind, IV. 777—in the time of the Crusades, VII. 535—ancient, X. 466—Venetian, 472—construction and use of, 488—mode of tracing vertical sections, IV. 468—of the Ordnance Survey, XXI. 336, 337. See Geography, Projection.
 Mar (Earl of), his rebellion in 1715, V. 453.
 —district of, II. 32.
 —(Earl of), brother of James III., XIX. 760, 761.
 Marabou, bird, XVI. 799.
 MARACAYBO, in Venezuela, XIV. 293; XXI. 537—town taken by the bucaniers, V. 711.
 —lake of, XIV. 293; VII. 134; XXI. 536—gulf of, XIV. 294.
 MARAGHA, or Maraga, XIV. 294.
 Marais, a district in Vendée in France, XXI. 534.
 Marajo, island, XII. 787.
 Marakah. See Dongola, New.
 Maraldi (J. P.), astronomical labours of, III. 803—on the planets Mars and Jupiter, IV. 66, 69—on the geometric properties of bees' combs, 578.
 MARANHAO, or Maranhão, in Brazil, XIV. 294; V. 281, 299—Island of, XIV. 294.
 Marañon, or Amazon, II. 650; XVII. 471. See Amazon.
 MARANS, French town, XIV. 294.
 Marantaceæ, nat. order of plants, V. 211.
 Maraschino, in Dalmatia, VII. 627.
 MARASH, in Asiatic Turkey, XIV. 294.
 MARAT (Jean Paul), XIV. 294; X. 71 *et seq.*—assassination of, VII. 364.

MAR—MAR

- MARATHON, XIV. 295—battle of, III. 626, *n.*; IV. 199, *n.*; Persian forces at, III. 623 and *n.* 4—conduct of Miltiades at, XV. 19.
 MARATTA (Carlo), painter, XIV. 295; XVII. 69.
 Maravedi, coin, XV. 436.
 MARAZION, town in Cornwall, XIV. 295.
 Marbach (Dr), on circular polarization, XVI. 682.
 MARBELLA, Spanish town, XIV. 296.
 Marble, XV. 92, 154—Athenian, IV. 167, *n.* 2—Carrara, VI. 273—Kilkenny, XIII. 85—Galway, X. 390—Marmora, XIV. 311—Florentine, VI. 735—Doce-menium marmor, VIII. 73—specific gravity of, XII. 88—of Pentelicus and Paros, XI. 14; XVII. 619—entrockal marbles, 98, *n.*—for building and sculpture, 619; XIX. 842; XX. 712—its strength, 717, 718—method of working it in statuary, XIX. 868.
 —cements, XX. 715.
 MARBLEHEAD, seaport in Essex, XIV. 296.
 Marburg, town in Styria, XIV. 296.
 —in Hesse-Cassel, XIV. 296—university of, XXI. 492.
 MARCANTONIO, engraver, XIV. 296.
 Marcand on bathing, IV. 500, 503.
 Marcasite, XV. 115.
 MARCELLIN (St), in France, XIV. 296; XII. 627.
 MARCELLUS (M. Claudius), XIV. 297—defeated by Hannibal, VI. 297—decoyed and killed, 289—Syracuse captured by, XX. 900.
 —(M. CLAUDIUS), XIV. 297.
 —(M. CLAUDIUS), XIV. 297.
 —theatre of, III. 476.
 Marcet (Bordier), his reflectors, XIII. 470.
 —(Dr), on the cold produced by sulphuret of carbon, VII. 104.
 Marcgraaffon birds, XVI. 725.
 Marcgraviaceæ, nat. order of plants, V. 186.
 March, Black Agnes, countess of, VI. 609.
 —market-town in England, XIV. 298.
 —month of, XIV. 297—gardening calendar for, XI. 758.
 —or Morava, river, XIV. 298; IV. 312.
 —of an army in war, XXI. 714.
 MARCHAND (Prosper), XIV. 298—on the origin and early progress of printing, IV. 706.
 Marchantiaceæ, nat. order of plants, V. 217, 145.
 MARCHE, in France, XIV. 298; X. 277.
 MARCHENA, Spanish town, XIV. 298.
 MARCION, XIV. 298; X. 689; XVIII. 265.
 Marcionites, XIV. 298, 299.
 MARCOMANNI, XIV. 299; X. 572, 576.
 Marco Polo. See Polo.
 Marcossians, followers of Marcus, XIV. 299.
 Marcotte (F.), his works on insects, IX. 23.
 MARCOUF, or Marcou (St), islets, XIV. 299.
 MARCUS, the Heresiarch, XIV. 299.
 MARDIN, town in Turkey, XIV. 299.
 Mare's tail, order of plants, V. 192.
 Mareb, in Arabia, III. 355.
 Mareca, genus of birds, XVI. 819.
 MAREMMA, or Maremma, La, XIV. 300—of Siena, III. 293.
 MARENGO, XIV. 300—battle of, V. 574; X. 118; XV. 793.
 MARENNE, town in France, XIV. 300.
 Mareotis (Lake), VIII. 429.
 MAREE (Loch), XIV. 300; XIX. 794.
 Mares, management of, in breeding, II. 338, 339.
 Marès (Léon), on rifled guns in war, XXI. 726, 727.
 Maretimo, Sicilian island, XX. 246.
 Marets (Samuel des), his controversy with Alting, II. 634.
 MARGARET of Anjou, XIV. 300; VIII. 689, 690, 691.
 —of France, XIV. 300.
 —the Maiden of Norway, XIX. 754.

MAR—MAR

- MARGARET, queen of Denmark, XIV. 300; VII. 739.
 —queen of Norway, XX. 845.
 —queen of Scotland, XIX. 746, 748, 750, *n.* 3.
 —queen of Scotland, XIX. 765—regent, 767—marriage to the Earl of Angus, *ib.*
 Margaric acid, II. 381.
 Margarine, IX. 757; XVI. 492.
 MARGARITA, island, XIV. 300—pearls of, XVII. 357.
 Margarite, mineral, XV. 79.
 MARGARITONE (d'Arezzo), painter, XIV. 300.
 Margarodite, mineral, XV. 78.
 Margary's method of preserving timber, XXI. 279.
 MARGATE, in Kent, XIV. 301—population, XIII. 67.
 MARGHILAN, or Marginan, in Turkestan, XIV. 301.
 Marginella, genus of mollusks, XV. 384—*M. undulata*, 385.
 Margraaf on alum, II. 635—on clay, V. 344.
 MARGRAVE, XIV. 301; IV. 515; XIII. 182.
 Mari Rose, vessel, loss of, XX. 125; XVI. 91.
 MARIA ISLAND, XIV. 301.
 —Louisa, empress of the French, X. 153.
 —THERESA, XIV. 301; XVIII. 652, 654—reign of, IV. 303.
 —(Donna), queen of Portugal, XVIII. 390, 392.
 Mariamne, XII. 771.
 MARIANA (John), Spanish historian, XIV. 302.
 Marianini on conductors of electricity, XXI. 622—on voltaic currents, *ib.*
 MARIANNA, town in Brazil, XIV. 303.
 MARIANNE ISLANDS, XIV. 303; XIII. 150.
 Marianus Scotus, XII. 786.
 MARIAS (Las Tres), islands, XIV. 303.
 MARIAZELL, town in Styria, XIV. 303.
 Marie, a French Capuchin, first notions of photometry given by, I. 753.
 —ANTOINETTE, XIV. 303; X. 82.
 —GALANTE, island, XIV. 304; XI. 72.
 MARIE-AUX-MINES (St), French town, XIV. 304.
 MARIENBERG, town in Saxony, XIV. 304.
 MARIENBURG, Prussian town, XIV. 304.
 MARIENWERDER, in West Prussia, XIV. 304.
 MARIETTA, town in Ohio, XIV. 304.
 Marignano, battle of, XX. 885.
 Marigold, XI. 745; V. 113—luminosity of, 170.
 Marimonda, monkey, XIV. 142.
 Marine insurance, XII. 419, 393.
 —boilers, prevention of smoke in, XX. 354, 355, 356—use of salt water in, 648—mechanical feeders for, 356.
 —barometer, IV. 457, 458; XX. 27.
 —governors, XX. 653, 654.
 —vegetation, V. 229; XVII. 629. See Fuci.
 MARINEO, city of Naples, XIV. 304.
 Mariner's compass. See Compass.
 Marines (Royal), XVI. 102, 105, 112.
 MARINI (M. Gaetano), XIV. 304.
 —poetry of, XVIII. 112.
 MARINO (San), or Sammarino, in Italy, XIV. 305.
 Marinula, genus of mollusks, XV. 375.
 Marinus, Roman anatomist, II. 752.
 —of Tyre, X. 468.
 Marion (Capt.), his voyage, IV. 253.
 MARIOTTE (Edme), XIV. 305—on barometrical measurements, I. 658; IV. 462—experiments and conclusions of, I. 729—on the colours of halos, VI. 645—on hydrodynamics, XII. 70, 111; XIX. 185—on reflected heat, XI. 262—law of, on the compressibility of gases, I. 958—on pneumatics, XVIII. 52, *n.* 53—on the strength of beams, XX. 763, 764.
 Marischal (Lord) of Scotland, XI. 320.
 —College, Aberdeen, II. 31; XXI. 480.
 Maritime Alps, II. 623.

MAR—MAR

- Maritime Law, Declaration respecting, XVI. 157.
 — defences, XXI. 701.
 Maritz on casting cannon, VI. 178.
 MARITZA, river, XIV. 305; XI. 280; XVII. 647.
 MARIUS (Caius), XIV. 305; XIX. 319, 321 — his defeat of the Teutones, VI. 724.
 MARIVAUX (P. C. de Chamblain de), XIV. 307—his novels, XIX. 287.
 Marjoram, plant, V. 202; XI. 745.
 MARK (St), the evangelist, XIV. 307—gospel of, ib.
 — (St), library of, at Venice, XIII. 417.
 Market-Bosworth, V. 64.
 — Dereham, in Norfolk, VII. 756.
 — HARBOROUGH, in Leicestershire, XIV. 308—fair at, IX. 468.
 — Jew, town in Cornwall, XIV. 295.
 Markets, IX. 468—in Liverpool, XIII. 520 — London, 664—Edinburgh, VIII. 405—Newcastle, XVI. 169, 170—Paris, XVII. 283. See Fairs.
 Markham (Gervais), on the qualities of an angler, III. 147—his works on angling, 163.
 — (Mr), on the river Purus, in Peru, XVII. 471.
 MARKINCH, in Fifeshire, XIV. 308.
 MARKLAND (Jeremiah), XIV. 308.
 Marl, XV. 92, 142—its use as manure, II. 303—shell-marl, ib.—red and variegated, XV. 206.
 MARLBOROUGH, in Wilts, XIV. 309.
 — (Duke of). See Churchill (John).
 MARLOW (Great), in Bucks, XIV. 309.
 MARLOWE (Christopher), XIV. 309; XXI. 166.
 Marlstone, XV. 207.
 Marly, aqueduct of, III. 336.
 MARMANDE, French town, XIV. 310.
 MARMONT (A. F. L. Viesse de, marshal), XIV. 310; X. 137 *et seq.*; 199, 200—in Spain, XXI. 824—defeated at Salamanca, 825—on artillery, III. 686—on rocks, 699.
 MARMONTEL (Jean François), XIV. 310 — his imprisonment for libel, XIII. 356 — his editorship of the *Mercur*, XVI. 197 — on Quesnay, XVIII. 733 — his Tales, XIX. 288—his character of Voltaire, XXI. 664.
 MARMORA, Sea of, XIV. 311.
 MARMORICE, or Marmaras, in Anatolia, XIV. 311.
 Marmosets, dentition of, XVI. 455.
 Marmot, XIV. 179—its hibernation, III. 180; XII. 62.
 MARNE, river, XIV. 311—departments of France, ib., 312—wines of, XXI. 883.
 MARNOCH, in Banffshire, XIV. 312.
 Marobia, atmospheric phenomenon in Sicily, XX. 246.
 Marobodus, X. 576.
 Marocco, II. 223. See Morocco.
 Marone-colour, dyeing of, VIII. 314.
 MARONITES, XIV. 312; XX. 909.
 Maroons, V. 557; XII. 673.
 MAROS, or Marosch, river, XIV. 313; XII. 10.
 MAROS-VASARHELY, in Transylvania, XIV. 313.
 MAROT (Clement), XIV. 313—his translation of the Psalms, XII. 190—poetry of, XVIII. 116.
 MAROWINE, or Maroni, river, XIV. 313.
 Marphysa, genus of annelides, XI. 298.
 MARPURG (F. Wilhelm), XIV. 313.
 Marque (letters of), II. 146.
 MARQUESAS, islands, XIV. 313; XVIII. 281.
 MARQUIS, or Marquess, title, XIV. 314—coronet of a, XI. 336.
 Marr, II. 32—earl of, V. 453.
 MARRACCI (Ludovico), XIV. 314.
 MARRAST (Armand), XIV. 314; X. 232, 238.
 MARRIAGE, XIV. 314—marriage customs in Abyssinia, II. 57—in North America, 681—Arabia, III. 353—Asia, 750—Babylonia, IV. 346—Cardiganshire, VI. 234—ancient Germany, 606; X. 573—Dahomey, VII. 620—Circassia, VI. 730

MAR—MAR

- Egypt, ancient, VIII. 440; modern, 446—Hindustan, XI. 473—Japan, XII. 692—Siam, XX. 233—aborigines of Australia, IV. 259—conducting the bride home, V. 347—encouraged by the Romans, VI. 362—concubinage, VII. 229—proportion of marriages to the population in England, 755—English law of, XII. 50; VIII. 781—Scotch law of, XII. 51—in what light regarded by Catholics and Protestants, VIII. 69—impediments to, by the Roman Catholic church, 68, *n.*—as a basis of law, XIII. 256—in relation to medical jurisprudence, XIV. 425—nubile age, ib.—circumstances invalidating, ib.—irregular, at Gretna Green, XI. 61; and in Berwickshire, IV. 681—needs no encouragement, XIV. 441—number registered in England, VIII. 755; in Scotland, XIX. 800—annual rate per cent. of, in England, XV. 649—duties relating to, 568—prudential restraint on, a check to over-population, XVIII. 346—dependence of marriages on deaths, 348—proportion of births to marriages, 352—proportion of those born in England living to marry, 354—proliferousness of marriages in England, ib.—effect of the absence of prudential restraint, 356—registration of, 831. See Bigamy, Celibacy, Divorce, Polygamy.
 Marriage-act, Royal, V. 474.
 Marriage feast, parable of the, I. 522, *n.*
 Marrow, II. 788, 828.
 — of Modern Divinity, XVIII. 497 and *n.* 2.
 — vegetable, plant, V. 193; XI. 736.
 MARRUCINI, Italian people, XIV. 314.
 MARRYAT (Frederick), captain, XIV. 314—his code of signals, XX. 25.
 — (Mr), on pottery and porcelain, XVIII. 432 *et seq.*
 MARS, god of war, XIV. 314.
 — planet, IV. 66, 90—phenomena of, 52—parallax of, 62—atmosphere of, 67—physical peculiarities, 90—Kepler on its motions, III. 799—variations of its orbit, IV. 107.
 MARSALS (Cesar Chesneau du), XIV. 315 — on the alphabet, II. 616.
 MARSALA, in Sicily, XIV. 315; XX. 245—wine, 248; XXI. 886.
 MARSDEN (William), XIV. 315—on the cannibalism of the Battas, III. 270—on edible birds-nests, IV. 727—on the language of the Gypsies, XI. 172.
 MARSEILLE, French city, XIV. 316 — Greek colony at, VIII. 184—waterworks of, III. 336—population, X. 277—epidemic small-pox at, XXI. 501. See Massilia.
 Marseillois, X. 68, 69.
 MARSH (Dr Herbert), bishop, XIV. 317.
 — (Mr), his improvements on the electro-dynamic cylinder, XXI. 639, 640. — See Marshes.
 — gas, VI. 506.
 Marsh's library, Dublin, XIII. 405.
 — process for detecting arsenic, VI. 495.
 MARSHAL, or Mareschal, XIV. 317—chief of Herald's College, XI. 320—in the Admiralty, II. 147.
 Marshall (E. S.), his gold-leaf, X. 703.
 — (Mr), on the mortality of London, XV. 616.
 — and Co.'s cloth works, XIII. 313.
 Marshall's Islands, XVIII. 270.
 Marshalling arms, in heraldry, XI. 339.
 Marshalsea, Court of, XI. 774.
 MARSHAM (Sir John), chronologist, XIV. 318.
 — (Thomas), his work on insects, IX. 4.
 Marshes, reclamation of, II. 363—their effect on health, IV. 184; XIV. 444—plants of, V. 221.
 MARSHFIELD, town in Gloucester, XIV. 318.
 MARSHMAN (Joshua, D.D.) missionary, XIV. 318—on the Chinese language, VI. 558, 571—his *Clavis Sinica*, 577

MAR—MAR

- Marshy soil, effects of, on timber trees, XXI. 268, 269.
 MARSI, Italian tribe, XIV. 318.
 Marsieul, his work on insects, IX. 24.
 MARSIGLI (Luigi Ferdinando, count), XIV. 318.
 Marsileaceæ, nat. order of plants, V. 216 — reproductive organs of, 144.
 Marsilli on birds, XVI. 726.
 Marsipobranchii, sub-order of fishes, XII. 228.
 MARSIVAN, or Marsovan, in Asiatic Turkey, XIV. 319.
 Marsland (Peter), his improvement of the steam-loom, VII. 451.
 MARSTON (John), poet, XIV. 319.
 Marston-moor, battle of, V. 405; VII. 511.
 Marsupialia, order of mammalia, XIV. 173, 136; XVII. 631—bones of their pelvis, III. 80—their pouch, 113—dentition, XVI. 447—order of their appearance in the strata of the earth, XVII. 92—of America, II. 713—Australia, IV. 260; fossil in, XVII. 638, 174, 175.
 Marsupites, fossil echinoderms, XVII. 98.
 MARTA, or MARTHA SANTA, in New Granada, XIV. 319; IV. 818.
 MARTABAN, XIV. 319; XVII. 367.
 Martel (Charles), X. 6.
 Marten, in zoology, XIV. 157—fur of, X. 347.
 Martensen, on the attributes of God, XXI. 189, 192.
 Martens, on public rights, XVI. 157, *n.*
 MARTIALIS (M. Valerius), Latin poet, XIV. 319.
 Martignac ministry, in France, X. 195, 196.
 MARTIGUES, French town, XIV. 320.
 MARTIN (Benjamin), XIV. 320—on solar microscopes, 790.
 — (DAVID), divine, XIV. 320.
 — (Gabriel), on the classification of books, IV. 715.
 — (General San), IV. 832; VI. 553; XVII. 467.
 — (J.), his entomological works, IX. 8.
 — (JOHN), painter, XIV. 321.
 — (LOUIS-ALMÉ), XIV. 320.
 — (LOUIS-CLAUDE DE SAINT), XIV. 321.
 — (St), island, XIV. 322; XI. 72.
 — bird, XVI. 758— anecdote of a combination of martins against a sparrow, V. 704.
 Martin's (St) Place, Savings-Bank, London, XIX. 667.
 — graphical perspective, XXI. 120.
 Martine (Dr), on heat, I. 758 and *n.*
 Martineau (Miss), deception in a case of alleged clairvoyance related by, XX. 439.
 Martinet on birds, XVI. 729.
 Martingal, XI. 683.
 MARTINI (Giovanni Battista), musician, XIV. 322; XV. 729.
 — (G. H.), on the dials of the ancients, VII. 773.
 MARTINIQUE, island, XIV. 322—long infested by ants, III. 361—bird-catching spider of, 377.
 MARTINUS, bishop of Tours, XIV. 322.
 Martite, mineral, XV. 108.
 Martlet, in heraldry, XV. 326.
 MARTOS, town of Spain, XIV. 323.
 — (IVAN PETROVICH), sculptor, XIV. 323.
 MARTYN (Henry), missionary, XIV. 323.
 — (John), botanist, VI. 408.
 MARTYR, XIV. 323—era of martyrs, VI. 672.
 — (Justin), IX. 491.
 — (PETER), XIV. 324.
 MARTYROLOGY, XIV. 324.
 Marucellian library, XIII. 415.
 Marum (Van), his electrical machine, VIII. 538—on the electricity of melted bodies, 565.
 Marvel of Peru, order of plants, V. 203.
 MARVELL (Andrew), XIV. 324.
 MARWAR, in Hindustan, XIV. 325; XIII. 10.
 MARY, seven persons of this name mentioned in Scripture, XIV. 325.

MAR—MAS

- MARY or Miriam, sister of Aaron and Moses, XIV. 325.
 — mother of Jesus, XIV. 325—worship of, XII. 750; XI. 36; I. 514—immaculate conception of, VII. 228; XII. 365—seldom mentioned in Scripture, and in such a way as to repress superstitious veneration, I. 515.
 — sister of Martha, XIV. 329.
 — mother of James and Joses, XIV. 329.
 — mother of John Mark, XIV. 329.
 — a pious Christian, XIV. 329.
 — consort of William III. of England, XIV. 329; V. 439—her death, 445.
 — queen of England, XIV. 329; VIII. 708—marriage to Philip of Spain, 709—death and character, 711—execution of Cranmer, VII. 484—her navy, XVI. 92—her designs against the Irish Protestants frustrated by a curious occurrence, XVIII. 829.
 — queen of Scots, XIV. 329; XIX. 775, *et seq.*—Buchanan her tutor, V. 717—criminality of, ib.—Chalmers' Life of, VI. 402—Edinburgh in the reign of, VIII. 391—Elizabeth's treatment of, 711, 637—Laing's dissertation on her guilt, XIII. 158—Bishop Lesley's services to, 343—John Knox's interviews with, 127—her visit to Glasgow, X. 646—colour of her hair, XIX. 231, *n.* 1—Robertson's account of, 230—her residence at Sheffield, XX. 95—Gilbert Stuart's History of, 783—Wm. Tytler's Inquiry into the Evidence against her, XXI. 410—P. F. Tytler, on her portraits, 415—Whitaker's Vindication of, 851.
 — MAGDALENE, XIV. 328.
 — of Guise, XI. 90; XIX. 773—her regency in Scotland, 778 *et seq.*
 — (St), island, IV. 336.
 — (St), island and cape, in Gambia, X. 393, 394.
 Mary's (St), Loch, XIX. 790; XX. 41.
 — College, St Andrews, XXI. 473, 474.
 MARYBOROUGH, in Queen's county, XIV. 329; XVIII. 730.
 MARYLAND, XIV. 330; XXI. 419—debt of, 428—first settlers in, 433—wine of, 888.
 Marylebone, XIII. 660—cricket club of, VII. 510.
 MARYPORT, in Cumberland, XIV. 331; VII. 577.
 MARYSVILLE, in California, XIV. 332.
 MASACCIO, painter, XIV. 332.
 MASANIELLO, XIV. 332; XX. 259.
 Masarides, tribe of insects, IX. 196.
 Masaris, genus of insects, IX. 196.
 Masaya, in Nicaragua, XVI. 244.
 MASBATE, island, XIV. 333.
 Mascagnine, mineral, XV. 99.
 Mascagni on the lymphatics, II. 766, 803—on adipose tissue, 788—on erectile tissue, 800—on exhalation, 802—on the cavernous bodies of the urethra, 800—on lymphatic glands, 805—on the villi of the ileum, III. 61.
 MASCALI NUOVO, town in Sicily, XIV. 333.
 MASCARA, town of Algeria, XIV. 333.
 Mascat, III. 360. See Muscat.
 Maschek, on the strength of men and animals, XIV. 416.
 MASCHERONI (Lorenzo), mathematician, XIV. 333; I. 701.
 Masclé, in heraldry, XI. 330 and *n.*
 Masculine, in grammar, X. 747.
 MASERES (Baron), XIV. 334 — services rendered to science by, I. 709, *n.* 1—on annuities, III. 222; XII. 400.
 MASHAM, in Yorkshire, XIV. 334.
 — (Mrs), XI. 229; III. 217.
 Mashing, in brewing, V. 325—in distillation, VIII. 48—mash-tun, V. 325—mashing machine, 339—Mr Tizard's method of, 325.
 Mashwort, plant esteemed by the Druids, VIII. 138.
 MASINISSA, Numidian prince, XIV. 334; VI. 299; XVI. 350.
 MASKELYNE (Nevil), astronomer, XIV. 334; I. 833—his observations and improvements at Greenwich, ib., 835—his lunar

MAS—MAS

observations, 833—his nautical almanack, 834; II. 598; III. 814—on the attraction of mountains, I. 834—his observations on Schellien, ib.; III. 807—his catalogue of stars, IV. 80—De-lambre's elege on, VII. 703—his astronomical labours, III. 806—his correction of Mayer's lunar tables, XIII. 687—his micrometers, XIV. 748, 750.

Masks used by Greek actors, VIII. 135, 139—by Roman actors, 142—man of the iron-mask, IX. 495; XVIII. 567.

Mason (Charles), his astronomical observations, XIV. 336; IX. 550.

— (WILLIAM), poet, XIV. 336—his hymns, XII. 189.

— engraver, VIII. 809.

Mason's improvements on Mayer's lunar tables, III. 811.

Mason-bee, IX. 199.

Mason-lodge, at Kilwinning, XIII. 88; XIV. 337.

Masonite, mineral, XV. 78.

MASONRY, XIV. 336; V. 737—application of statical principles to, I. 870.

Masons, V. 737—diseases of, XIV. 442.

— (FREE), XIV. 336.

MASORA, term in Jewish theology, XIV. 339; XIX. 834, 835.

Masoretic points, XIII. 209—Capellus on, VI. 206—Kennicott on, XIII. 63.

MASQUERADE, XIV. 339.

MASS, in the Romish Church, XIV. 339; I. 513; XVIII. 336—mass of the pre-sanctified, XIV. 339.

Massa (Nicolaus), II. 761.

MASSA DI CARRARA, town in Italy, XIV. 339.

Massaccio, painter, XVII. 62.

MASSACHUSETTS, XIV. 339; XXI. 419—mortality in, 421—debt of, 428—colonization of, 432—wine of, 888—Spy newspaper, XVI. 193—number of newspapers published in, 194—education in, XV. 820.

MASSAFRA, town in Naples, XIV. 342.

MASSAROONY, river in British Guiana, XIV. 342.

MASSENA (André), marshal, XIV. 342; X. 99, 100 *et seq.*, 178; V. 608—his operations in Portugal, XVIII. 388—Spain, XXI. 823—his disgrace, 824.

Massey, his sounding apparatus, XX. 26.

Massicot, IV. 497.

Massieu (John), deaf and dumb boy, VII. 681.

MASSILA, XIV. 343, 316—coinage of, XVI. 361.

— planet, IV. 91.

MASSILLON (Jean Baptiste), XIV. 343—compared with Bourdaloue, V. 249.

— town in Ohio, XIV. 344.

MASSINGER (Phillip), XIV. 344—his dramatic works, VIII. 159—some of them derived from Bandello's novels, IV. 411—Gifford's edition of his works, X. 622.

Massman (Dr), on ancient waxen tablets XVII. 207, *n.*—portions of Scripture from palimpsests, published by, 209.

Massospondylus, fossil reptiles, XVII. 152.

MASSOUAH, town in Abyssinia, XIV. 345—trade of, XVIII. 819.

Mastacembelus, genus of fishes, XII. 292.

MASTER AND SERVANT, XIV. 345—duties of, XV. 569; of master manufacturers, XIV. 280.

— in the navy, XVI. 104.

— of the household, XI. 774—of the horse, 776.

Master-keys, XIII. 541.

Master-singers of Germany, poetry of, XVIII. 118.

MASTIC, or Mastich, XIV. 350; V. 190; VI. 368; XIX. 88; XX. 715.

Mastication, XVII. 658.

Mastiff, XI. 763.

Mastigias, Egyptian deity, XI. 386.

Mastigophorus, fossil cuttle-fish, XVII. 114.

Mastigus, genus of insects, IX. 113.

Mastodon, XVII. 167, 168, 637 and *n.* 2—dentition of, XVI. 472, 473—in New York, 216.

MAS—MAT

Mastodonsaurus, fossil reptiles, XVII. 137, 138.

Mastoid cells of the ear, III. 46.

Masts, building of, VI. 262—position of, XX. 159.

MASULIPATAM, in Hindustan, XIV. 351—calicoes manufactured at, VII. 439.

Ma-t, Egyptian deity, VIII. 437.

Matamata, a species of turtle, XIX. 21.

MATAMORAS, or Matamoros, in Mexico, XIV. 351, 728.

MATAN, island, XIV. 351.

MATANZAS, in Cuba, XIV. 351.

Mataquito, river in Chile, VI. 543.

MATARO, town in Spain, XIV. 351.

MATCHES, XIV. 351.

MATCHIN, Turkish town, XIV. 352.

Maté, South American tea, V. 199; XVII. 268, 629; XXI. 83.

MATELICA, town of Italy, XIV. 352.

MATERA, town of Naples, XIV. 353.

MATERIA MEDICA, XIV. 353, 463. See Medicine.

MATERIALISM, XIV. 353—opposed by Leibnitz, I. 128—taught by Epicurus, III. 308—Robert Hall's notions of, XI. 191.

Materialists, I. 57—fallacy of their reasoning, 58.

Mathematical Geography, X. 479.

— theory of heat, I. 946; of electricity, 987; of magnetism, 994; of the propagation of sound, 891.

— theories of thought, XIII. 577, *n.*

Mathematicians, ancient, XX. 300.

MATHEMATICS, XIV. 353—ancient works on, preserved in religious establishments during the dark ages, I. 550—language of, must always consist of two parts, 561—abstract, II. 52—Aristotle on, III. 541, 550—formula in, IX. 787—mode of teaching the blind, IV. 777—pure, I. 804, 806—connection between mathematics and natural philosophy, 805—Fourier's writings on, 951—cumbrous character of the literature of, 804 and *n.* 2—their progress in this country, 806—their application to medicine, XIV. 461—necessary mathematical judgments, 595, 596—knowledge of among the Persians, XVII. 430—first application of mathematical calculation to naval architecture, XX. 130—knowledge of, desirable for the study of theology, XXI. 182. See Geometry, &c.

Matheot's (Mr), process of engraving, XXI. 636.

MATHER (Cotton, D.D.), XIV. 354.

— Dixon, & Co., their steam-engines, XX. 607.

— (INCREASE, D.D.), XIV. 354.

Matheson (Sir James), his improvements in Lewis, XIII. 352.

MATHEWS (Charles), comedian, XIV. 354.

Mathison (G. F.), his refinery, VII. 81.

Mathos, VI. 291, 292.

Mathulen of Lyon, on the quadrature of the circle, XX. 522.

Matilda, queen of England, VIII. 671.

MATINA, in Costa Rica, XIV. 355.

MATLOCK, in Derbyshire, XIV. 355—springs at, VII. 755—dale, 754.

Matlockite, mineral, XV. 105.

Matriculation, in universities, XXI. 457 *et seq.*

Matrona, name of Juno, XIII. 20.

MATSYS (Quintin), painter, XIV. 355.

Mattarah, or Mattrah, Arabian town, III. 360.

Mattathias, Jewish patriot, XII. 769.

MATTEI (Stanislao), XIV. 355.

Matter, divisibility of, VI. 443; VIII. 66—four primary elements of, according to the Greeks, IV. 448—early opinions on the constitution of, I. 935. See Idealism, Materialism.

Matteucci, on animal electricity, I. 961; VIII. 571—on the electricity of the solar rays, 569—electric fishes, 577—his theory of hail, 586; and of sheet lightning, 587—his phosphorus electrometer, 622—on thermo-electricity, XXI. 655.

Matthaei on recension of the text of New Testament, XIX. 836.

MAT—MAX

Mattheson on Handel, XI. 206.

Matthew de Gradibus, II. 756.

— of Westminster, XIV. 357.

— (St), evangelist, XIV. 355—Gospel of, 356.

— (St), island, XIV. 357.

Matthew's Bible, IV. 702.

Matthias (Anabaptist), II. 742.

Matthiessen (Mr), on diamagnetism, XIV. 30.

MATTHISSON (Frederic von), poet, XIV. 357.

MATTO GROSSO, in Brazil, XIV. 357.

Mattresses, floating, XIII. 440.

MATURIN (Charles Robert), XIV. 358—his Montorio, XIX. 277—sum paid for his tragedy of Bertram, XXI. 173.

MATY (Matthew, M.D.), XIV. 358.

MAUBEUGE, town in France, XIV. 358.

MAUCH CHUNK, in Pennsylvania, XIV. 358.

MAUCHLINE, in Ayrshire, XIV. 358.

Maud, daughter of Henry I., VIII. 671.

Maudslay and Field, their marine steam-engines, XX. 639.

Mauduit on birds, XVI. 729.

— on the springs in the plain of Troy, XXI. 357.

Maui, island, XVIII. 270.

MAULE, river and province in Chile, XIV. 359; VI. 543, 547.

MAUMEE, river, XIV. 359.

MAUNDAY THURSDAY, XIV. 359.

Maupouana, II. 739.

MAUFERTUIS (P. L. M. de), XIV. 359—the first eminent mathematician who taught the Newtonian philosophy in France, I. 603—on the laws of motion, VIII. 343—on the length of the degree, IX. 549—on refraction, 517—on the political economy of France as due to England, XVIII. 220, *n.* 3.

MAURETANIA, XIV. 360; XV. 596; II. 566.

Maurice, of Nassau (Count), his administration in Brazil, V. 282.

— OF NASSAU, Prince of Orange, XIV. 361; XI. 571 *et seq.*

— (St), knights of, II. 645.

— (THOMAS), XIV. 361.

Mauriceau (Francis), on midwifery, XIV. 461.

MAURICIUS (F. Tiberius), emperor of Constantinople, XIV. 361.

MAURITIUS, XIV. 362; II. 229—slavery in, XX. 323, 327—sugars of, 795, 796—weights and measures of, XXI. 812.

MAURO (Fra), cosmographer, XIV. 364.

MAUROLICO, or Maurolycus (Francis), XIV. 365—his contributions to mathematics, I. 552—distinguished for his skill in optics, 624—formed a right judgment of the defects of short-sighted and long-sighted eyes, *ib.*—explained why light admitted through a hole of any shape, and received upon a plane, always illuminates a round space, and through a large one, a space the shape of the aperture, *ib.*—nearly discovered the functions of the different parts of the eye, *ib.*—supposed that light acquires colour by refraction in passing through the water-drop of the rainbow, *ib.*—on optics, XIII. 449; XVI. 525.

Maury (Capt.), on spider lines for telescopes, XIV. 744, *n.* 2.

— (JEAN SIFFREIN), cardinal, XIV. 365.

— (Lieut.), his works on physical geography, XVII. 572—on the superiority of fish for food when found in the colder seas, 635—on the currents of the Polar regions, XVIII. 176—his charts, XX. 26.

MAUSOLEUM, XIV. 365—origin of the name, III. 680; XIX. 857—of Adrian, III. 473—of Augustus, *ib.*

Mausolus, king of Caria, III. 680; XIX. 857.

Mavrocordate, XI. 24, 26 *et seq.*

Maxence, centre employed for the bridge of, VI. 377.

MAXENTIUS (M. A. Valerius), Roman emperor, XIV. 366; XIX. 351.

Maxillae, in birds, III. 85—crustacea, VII. 538—insects, IX. 32.

MAX—MAZ

Maxillary sinus, III. 30.

— bones, in man, III. 21, 23—in the mammalia, 78—in birds, 85.

MAXIMIANUS (G. Valerius), Roman emperor, XIV. 366; XIX. 351.

— (M. A. VALERIUS), Roman emperor, XIV. 366; XIX. 350.

Maximilian I., emperor, IV. 302.

MAXIMINUS (C. J. Vetus), Roman emperor, XIV. 366; XIX. 348.

— (G. VALERIUS), Roman emperor, XIV. 366; XIX. 352.

MAXIMUS, the Confessor, XIV. 366.

— (M. CLEMENS), Roman emperor, XIV. 366; VII. 310.

— (PETRONIUS), Roman emperor, XIV. 366.

— (TYRANNUS), Roman emperor, XIV. 366.

Maxtlaton, Mexican king, XIV. 701.

Maxwell (Clerk), on rolling curves, XIV. 392—his platometer, 415—on agriculture, II. 262.

— (John, D.D.), IV. 373, *n.*

— (John), of Munches, on the condition of the peasantry in Kirkcudbright in 1720, XIII. 99.

— of Gribtown, trial of, XIII. 23.

— on electrical fishes, VIII. 577.

— (W. H.), on deer-stalking, XX. 212.

MAXWELLTOWN, in Kirkcudbrightshire, XIV. 366.

MAX, month of, XIV. 367—gardening operations in, XI. 759.

— apple, plant, V. 180.

— (ISLE OF), XIV. 367; IX. 795—dioptric lights of, XIII. 475; Report of the Royal Society on, *ib.*

— (THOMAS), poet, XIV. 367.

May-bug. See Cockchafer.

MAY-DAY, XIV. 367—May-games, XV. 598, 599.

May-flies, their use in angling, III. 149.

Maya language, XIII. 223.

Mayacaceæ, nat. order of plants, V. 213.

MAYBOLE, town in Ayrshire, XIV. 367.

MAYEN, in Rhenish Prussia, XIV. 367.

MAYENCE, in Rhenish-Hesse, XIV. 368; XI. 363—early printing at, IV. 706, 708; XVIII. 527.

MAYENNE, in France, XIV. 368.

— river in France, XIV. 369.

MAYER (Tobias), XIV. 369—his lunar tables, I. 695, 781, 814, 833; III. 811; XIII. 687; XIV. 335—changed the sextant into a circle, and produced the repeating-circle, I. 749—his dipping-needle, XIV. 85—on magnetism, 5—his rule for calculating mean temperature, VI. 768—his catalogue of stars, IV. 80—on the proper motion of the stars, I. 846.

— (Frederic-Christian), on the arithmetic of sines, II. 547.

— (John), of Hamburg, on anonymous books, IV. 711.

— on the nerves, II. 806, 807.

— on the dynamical theory of heat, XI. 276.

Mayhew (Henry), his work on London, XIII. 674—on the London fish-market, IX. 649; VIII. 728.

Mayhill group of rocks, XV. 197.

Maynard (George), on binocular vision, XX. 685.

MAYNOOTH, XIV. 369—College, XII. 533.

MATO, Irish county, XIV. 369—agricultural statistics, XII. 516, 517.

— (John), his long beard, IV. 528.

— (Mr), on the nerves, II. 814.

— on animal magnetism, XX. 432.

MAYOMBA, or Mayumba, African seaport, XIV. 372.

Mayor, Lord, of London, XIII. 677.

MAYOTTA, island, XIV. 372.

MAYOW, or Mayo (John), XIV. 372, 460; II. 761—his chemical discoveries, IV. 566.

MATPU, river in Chili, XIV. 372; VI. 453.

MATSVILLE, in Kentucky, XIV. 372; XIII. 70.

MAZAMET, French town, XIV. 372.

MAZANDERAUN, in Persia, XIV. 372; XVII. 421, 423—silk produced in, 424.

MAZ—MEC

- MAZARIN (Jules), XIV. 373; X. 34—Colbert's connection with, VII. 97—his enmity to the Prince of Condé, VII. 232, 233.
- Mazarine library, XIII. 408.
- Mazaruni, river in British Guiana, XIV. 342.
- Mazeas (Abbé), on atmospheric electricity, XIV. 660—on the colours of mixed plates, XVI. 623.
- MAZEPPA (John), hetman of the Cossacks, XIV. 374; VII. 423; XIX. 479.
- MAZZARA, seaport in Sicily, XIV. 374; XX. 246—atmospheric phenomena near, ib.
- Mazzini, XII. 658.
- MAZZOCCHI (Alessio Simmaco), XIV. 374.
- Mazzoni, VII. 499.
- MAZZUCHELLI (Conte G. Maria), XIV. 374.
- MEAD (Dr Richard), XIV. 374, 462—controversy arising out of a work by, XX. 813, n. 1.
- a beverage, IX. 765—used by the Anglo-Saxons, VIII. 666—the drink of deified heroes, XV. 767.
- MEADAY, town in India, XIV. 375.
- Meadow, irrigation of meadows, II. 326; XII. 611; XIII. 648, 649.
- plants, V. 221.
- Meadows (General), XI. 498.
- Meal, mountain, mineral, XV. 70.
- Meals, posture of the Greeks and Romans at, II. 80—number of daily, and intervals between, IX. 768.
- Mealy Mountains, XIII. 139.
- Meanwood church, clock of, VII. 19, 20.
- Mearns, Scotch county, XIII. 89. See Kincardineshire.
- Measure, in music, XV. 717.
- Measurement of brick-work, V. 736—stone-walling, 740—plasterers' work, 745—slaters' work, 746—carpenters' work, 749—joiners' work, 753—plumbers' work, 756—of the human figure, VIII. 172—of timber, XXI. 280. See Barometrical Measurement, Mensuration, Tonnage, Trigonometrical Survey.
- MEASURES, XIV. 375—tables of, III. 584; XXI. 804 *et seq.*, 808—Dr Cumberland on Jewish, VII. 580—Egyptian, VIII. 517—foreign land, II. 115—proposals for a new system of, VII. 702, 230—Roman foot, 230—French, X. 284. See Weights and Measures.
- Measuring Machines, XIV. 414.
- Meat, modes of preserving, IX. 767—preserved meats for the navy, XX. 24.
- MEATH, Irish county, XIV. 375—agricultural statistics, XII. 515, 517.
- MEAUX, French town, XIV. 378.
- Mecastor, oath, VIII. 370.
- MECCA, XIV. 378—taken by the Wahabys, III. 364, 366—recaptured by the Turks, ib.—various notices of, 364, 365—taken by Mahommed, XV. 300—caravans of pilgrims to, VI. 230—cabaa, or black stone of, probably an aërolite, I. 459—balsam of, IV. 401—fair at, IX. 469.
- MECHAIN (P. F. André), XIV. 379; I. 775, n.—measurement of an arc of meridian by, 836, 337; VII. 702; IX. 551.
- Mechanical arts, I. 801—their connection with physical science, 807—inventions in, presume a knowledge of physical laws, 808—what constitutes a mechanical philosopher, ib.
- notation, I. 880.
- power—electro-magnetism applied as a, XXI. 643. See Mechanics.
- rocks, XV. 130, 139, 141.
- Mechanics, ancient, X. 501.
- Mechanics, XIV. 380—small progress made in the science before the end of sixteenth century, I. 590—state of, in the seventeenth century, 865—Guido Ubaldo, 590—Stevinus, ib.—revolution effected by Galileo, 591—Torricelli, 593—Descartes, ib.—Hooke, 595—Huygens, ib.—principle of *virtual velocities* enunciated, 651—Varignon's *Projet d'une Nouvelle Mécanique*, 651, 652—Newton's *Principia*, 652—improvements by Leibnitz, ib.—force of a moving body estimated by Descartes and Leib-

MEC—MED

- nitz, 654—controversy which ensued, 655—principles relative to the force of moving bodies, 656—controversy as to the *vis viva*, 657—problems solved in the times of Newton and Leibnitz, 658—contributions of Halley, 658, 659—James Watt, 865—state of, in the seventeenth century, ib.—philosophical spirit infused into practical mechanics by Watt, 866—Robison, 870; his *Mechanical Philosophy*, 872; XIX. 239—Coulomb, I. 873—Young, 874—mechanical properties of solids, ib.—Young's mechanical writings, 875—Robert Stephenson, 876—Sir Marc Isambart Brunel, 878—self-acting machinery, ib.—impulse given to mechanics by the success of the block-machinery, 879—Trevithick, 882—George Stephenson, 883—Poisson's statical couples, 825—Poisson's treatise on, ib.—electro-magnetism as a prime mover, 987—discoveries in, by Galileo, X. 381—knowledge of, in ancient Egypt, VIII. 442; among the Druids, 187; in China, VI. 586. See Carpentry, Dynamics, Lever, Rotation, Statistics, Strength of Materials, Weighing Machines.
- Mechanics, animal, XIV. 461.
- Institutions, importance of, VII. 457—at Manchester, XIV. 259; XV. 824—statistics of, for the United Kingdom, 825—Glasgow, X. 652—Leeds, XIII. 314.
- Mechanism, pure, XIV. 384—elementary combinations in, 390—trains of, 400, 404—forces applied to, 403.
- MECHLIN, town in Belgium, XIV. 418—steeple of, III. 411—lace, XIII. 142, 143.
- MECHOACAN, in Mexico, XIV. 419, 724, 718.
- Meckel (Albert), on the lymphatics, II. 804.
- (JOHANN FRIEDREICH), XIV. 419—his anatomical labours, II. 765—his *Manual*, 767; III. 73—on the veins, II. 767, 793—on the lymphatics, 804.
- MECKLENBURG, in Northern Germany, XIV. 419—weights and measures, XXI. 812.
- (Princess Anne of), XIX. 482.
- SCHWERIN, XIV. 419.
- STRELITZ, XIV. 419.
- Meconic acid, its poisonous quality, XIV. 436.
- Medallions, Roman, XVI. 384.
- MEDALS, XIV. 420—taking casts of, VI. 325—curious means of preserving, XXI. 504—method of copying by electricity, 635—Vaillant on, 504—Academy of Medals and Inscriptions at Paris, II. 69. See Numismatics.
- MEDE (Joseph), XIV. 420—on the allusions to a future state by the Old Testament prophets, I. 474.
- MEDEA, XIV. 420.
- Medeenet-Haboo, antiquities at, VIII. 510, 462.
- MEDELLIN, in New Granada, XIV. 420.
- Medeterus, genus of insects, IX. 243.
- MEDGYES, or Mediasch, in Transylvania, XIV. 420.
- MEDIA, XIV. 420—monarchy, XV. 413.
- Median language, XIII. 200, 208.
- Medieval history and historians, XI. 542, 543, 548—coins, XVI. 385—roofs, XIX. 390. See Middle Ages.
- Medical academies, II. 62; and societies, XIV. 461.
- electricity, VIII. 603.
- JURISPRUDENCE, XIV. 422, 463.
- men, influence of their profession on their health, XIV. 442.
- Missionary Society, XV. 273.
- officers, naval, XVI. 112, 114.
- police, XIV. 440.
- profession, XIV. 450.
- schools, in United Kingdom, XIV. 463—of United States, XXI. 493.
- Mediceo-Laurentian Library, XIII. 414; XIV. 447.
- MEDICI, family of, XIV. 445; XII. 651; XXI. 397, 398—their patronage of

MED—MEG

- science and art, XIV. 458; XVII. 62; XIX. 861, 862.
- Medici (Cosmo de), XIV. 446; XIII. 414.
- (Lorenzo de), XIV. 447, 459—Roscoe's *Life of*, XIII. 444; XIX. 417.
- (Maria di), XIX. 161, 162.
- Medicinal foods, XIX. 611.
- MEDICINE, XIV. 448—ancient, 449—modern, 457—clinical, 461—legal, 422—forensic, 425—study of, calculated to develop the intellect, I. 101—state of, in Turkey, III. 659 and n. 2—knowledge of, in ancient Egypt, VIII. 442; in China, VI. 585; among the Druids, VIII. 188; in Russia, XIX. 535—characters of abbreviations in, VI. 419—improved by the Crusades, VII. 535—employment of electricity in, VIII. 603—of chloroform, VI. 629—medicines distinguished from aliments and poisons, III. 179—alterative medicines, II. 632—ignorance of, in Persia, XVII. 430—active poisons form the best, XVIII. 135—serpents formerly used in, XIX. 49—distinguished from surgery, XX. 809—Edinburgh School of, XXI. 484. See Disease, Health, Physic, Physiology, Veterinary Science.
- MEDINA, or El Medinah, in Arabia, XIV. 467—various notices of, III. 355 *et seq.*—taken by the Wahabys, 364—recaptured by the Turks, ib.
- DEL CAMPO, XIV. 468.
- DEL RIO SECO, town in Spain, XIV. 468.
- group of rocks, XV. 199.
- (Pedro de), his *Treatise on Navigation*, XVI. 3.
- river in Isle of Wight, XXI. 861.
- SIDONIA, town in Spain, XIV. 468.
- Sidonia (Duke of), XVIII. 384—commander of the Spanish Armada, VIII. 713.
- MEDIOLANUM, XIV. 468.
- MEDITERRANEAN SEA, XIV. 469; IX. 385—evaporation of, XVII. 573—saltiness of, 574—Ptolemy on the, X. 467—springs of fresh water in, XVII. 574—railway and proposed canals between it and the Red Sea, XX. 430; VIII. 430.
- Medlar, V. 191; XVII. 763—culture of, XI. 716.
- MEDOC, in France, XIV. 471.
- Medulla oblongata, XVII. 558, 668, 669, 674, 699.
- spinalis, XVII. 558.
- Medullary sheath and rays of plants, V. 81, 82.
- tissue of animals, III. 171.
- membrane of bones, II. 828.
- MEDUSA, Gorgon, XIV. 471; X. 717; XVII. 418.
- genus of zoophytes, XXI. 996, 997.
- Medusidae, XXI. 995, 996, 1006—their phosphorescent properties, 998, and n. 2—in the Greenland Sea, XI. 43.
- MEDWAY, river, XIV. 471; XIII. 65; VIII. 716.
- Meeanahs, VII. 598.
- MEEANEE, Indian town, XIV. 471.
- Meer Cossim, XI. 146, 147.
- Jaffier, XI. 484, 487.
- MEERMAN (Gerard), XIV. 471—his work entitled *Origines Typographicae*, IV. 706.
- (JAN), XIV. 471.
- Meerschbaum, mineral, XV. 84—pipe-bowls made of, XVII. 480—clay exported from Turkey, XXI. 384.
- MEERUT, in Hindustan, XIV. 471; XVI. 301; XVII. 480—outbreak of the mutiny of 1857 at, XVI. 302.
- Megacephala, genus of insects, IX. 78.
- Megacephali, family of insects, IX. 242.
- Megaceros, XVII. 170—teeth of, XVI. 466.
- Megachile, genus of insects, IX. 199.
- Megachirus, fossil shrimp, XVII. 102.
- Megacles, IV. 195.
- Megaderma, genus of mammalia, XIV. 149.
- Megaderus, genus of insects, IX. 144.
- Megalichthys, genus of fossil fishes, XII. 335; XVII. 125.

MEG—MEL

- Megalodontes, genus of insects, IX. 183.
- Megalonyx, fossil mammals, XVII. 174, 638.
- MEGALOPOLIS, XIV. 471.
- Megalops, genus of fishes, XII. 251—fossil, 347.
- Megalopus, genus of insects, XI. 147.
- Megalosaurus, fossil reptiles, XVII. 151—jaw and teeth of, XVI. 433.
- Megalotis, genus of mammalia, XIV. 165.
- Megalurus, genus of fossil fishes, XII. 336.
- Megapodius, genus of birds, XVI. 807.
- Megaprotodon, genus of fishes, XII. 302.
- MEGARA, XIV. 472—war with Athens, IV. 194—philosophic school of, XVII. 786.
- MEGARIS, in Greece, XIV. 472.
- Megascelis, genus of insects, IX. 147.
- Megaspira, fossil mollusks, XVII. 111.
- Megasthenes, III. 752.
- Megatherium, XVII. 174, 638—jaws, teeth, and dental tissues of, XVI. 441, 442.
- Megilloth, Targum on the, XXI. 24.
- Megrims, in horses, XI. 660.
- MEHEMET ALI, or MOHAMMED ALI, or MOHAMMAD ALEE, Pasha of Egypt, XIV. 472—history of, VIII. 489 *et seq.*—his massacre of the Mamelukes, 493—expeditions against the Wahabys, III. 365, 366; IV. 493; VIII. 493—his war with the Greeks, 494; with the Porte, ib.—his designs on Syria, V. 66—his occupation of Jerusalem, XII. 735—his death and character, VIII. 495—improvement of the manufactures and commerce of Egypt, 494—general policy, 496—his extension of cotton culture, VII. 448; VIII. 516—his political and commercial improvements, 515, 516—conquest of Syria, XXI. 374; XVII. 198—his rule there, XX. 911.
- MEHIDPOOR, town in Hindustan, XIV. 472.
- MÉHUL (Etienne Henri), XIV. 472.
- Mehun, island, XVII. 413.
- MEHWAS, in Hindustan, XIV. 473.
- MEIBOM, or Meibomius (Marc), XIV. 473.
- (Henry), II. 763.
- Meigen (J. W.), his works on insects, IX. 12.
- Meigle, vitrified fort at, IX. 792.
- Meikle (Andrew), XIX. 10—his thrashing machine, II. 282; VI. 750.
- (Mr), on evaporation, IX. 413.
- MEINERS (Christoph), XIV. 473.
- MEININGEN, in Germany, XIV. 473.
- Melocene, XVII. 637.
- Melonite, mineral, XV. 72.
- Meisenheim, XI. 363.
- MEISSEN, town in Saxony, XIV. 473—porcelain factory at, XVIII. 436.
- MEISSNER (A. Gottlieb), XIV. 474.
- Mekka. See Mecca.
- MEKLONG, town of Siam, XIV. 474.
- MEKONG, or Mekong river, XIV. 474; VI. 113; VII. 48; III. 735; XX. 232.
- MEKRAN, or Mukran, in Beloochistan, XIV. 474.
- MELA (Pomponius), XIV. 474.
- Melado sugar, XX. 796.
- MELAMPUS, soothsayer, XIV. 475.
- Melancholia, XIV. 531.
- MELANCTHON (Philipp), XIV. 475; XVIII. 821, *et seq.*, 826—his connection with Luther and the Reformation, XIII. 725, 726, *et seq.*—his approval of the Peripatetic doctrines, I. 16; III. 537—quoted on moral distinctions, I. 20—approved of the execution of Servetus, VII. 482—his philological learning, XVII. 523—his theological writings, XXI. 183—his followers, ib.—his definition of God, 184—on theology, 199, *et seq.*
- Melandrya, genus of insects, IX. 132.
- Melania, fossil mollusks, XVII. 110.
- Melanism, in animals, XIV. 134.
- Melanite, XV. 85.
- Melanochroite, mineral, XV. 106.
- Melanoplectic membranes, III. 97.
- Melanopsis, fossil mollusks, XVII. 110.
- Melanterite, mineral, XV. 97.
- Melanthaceæ, nat. order of plants, V. 213.
- Melanthus, IV. 193.
- Melaphyre, rock, XV. 135.
- Melas (General), V. 574; X. 118.
- Melasis, genus of insects, IX. 105.

MEL—MEL

Melasoma, family of insects, IX. 128.
 Melastomaceæ, nat. order of plants, V. 191.
 —region of, 228; XVII. 629.
 Melbourne (Lord), his administration, V. 664, 665. See Lamb (William).
 —in Australia, XIV. 477; IV. 286, 287, 290.
 MELCHISEDEC, XIV. 479.
 MELCHTHAL (Arnold of), XIV. 481.
 MELDRUM (Old), in Aberdeenshire, XIV. 481.
 MELEAGER, Greek poet, XIV. 481.
 —a Macedonian, XIII. 773.
 Meleagrina, genus of mollusks, XV. 348.
 Meleagris, genus of birds, XVI. 786.
 Melecta, genus of insects, IX. 200.
 MELEDA, island, XIV. 482.
 Melegnano, battle of, in 1859, XIX. 644.
 MELENDEZ VALDES (Juan), Spanish poet, XIV. 482.
 Meles, genus of mammalia, XIV. 155—
 dentition of, XVI. 462.
 MELETIUS, bishop of Antioch, XIV. 482.
 —founder of the sect of the Mele-
 tians, XIV. 483.
 —anatomist, II. 754.
 Meletta, genus of fishes, XII. 237.
 Meletus, one of the accusers of Socrates,
 XX. 380, 388, 389.
 MELFI, town of Naples, XIV. 483.
 MELI (Giovanni), XIV. 483.
 Meliaceæ, nat. order of plants, V. 187.
 Melichthys, genus of fishes, XII. 313.
 Melipona, genus of insects, IX. 203.
 Melissodes, genus of insects, IX. 200.
 MELISSUS, philosopher, XIV. 484.
 Melita. See Malta.
 Melite, in Athens, IV. 169.
 Melithreptus, genus of birds, XVI. 769.
 Melitophili, family of insects, IX. 126.
 MELKSHAM, in Wilts, XIV. 484.
 Mellinus, genus of insects, IX. 196.
 Mellita, fossil echinoidea, XVII. 100.
 Mellite, mineral, XV. 125.
 Melliturga, genus of insects, IX. 200.
 MELLONI (Macedonio), XIV. 484; I. 955—
 the associate of Nobili, ib.—the thermo-
 multiplier improved by, ib.—his dis-
 covery of the singular transparency of
 rock-salt for heat, ib.—on the specific
 action of different substances on the
 rays of heat, 956—on the coloration of
 heat, ib.—explanation of the point of
 maximum heat in the spectrum, ib.—
 on heat, XI. 265, 266, 276—his electro-
 scope, VIII. 622—his thermo-electric
 pile, XXI. 652—his death, I. 956.
 MELMOTH (William), senior, XIV. 485.
 —(William), junior, XIV. 485.
 MELODICA, musical instrument, XIV. 485.
 MELODICON, keyed instrument, XIV. 485.
 MELODION, XIV. 485.
 MELODY, XIV. 485; XV. 715.
 Meloe, genus of insects, IX. 135.
 Melogranis' blowpipe, IV. 792.
 Melolontha, genus of insects, IX. 124.
 Melolonthides, family of insects, IX. 124.
 Melon on political economy, XVIII. 220,
 n. 3.
 —V. 193—culture of, XI. 733—struc-
 ture of, V. 138, 126, 87, 80, 193—melon-
 cactus, 103—superiority of, in Hungary,
 XII. 10, 17—Persia, XVII. 421.
 Melonry, XI. 733.
 Melophagus, genus of insects, IX. 259.
 Melopsite, mineral, XV. 84.
 Melos, IV. 207.
 MELPOMENE, muse, XIV. 485; XV. 699.
 —planet, IV. 91.
 MELROSE, XIV. 485—Abbey of, III. 482;
 carved vegetables on, X. 668—fair at,
 IX. 468.
 Melsheimer (F. E.), his work on insects,
 IX. 24.
 MELSUNGEN, town in Hesse-Cassel, XIV.
 486.
 Melted bodies, electricity of, VIII. 565.
 MELTON-MOWBRAY, XIV. 486; XIII. 321.
 MELUN, town of France, XIV. 486.
 MELVILLE (Andrew), XIV. 486—M'Crie's
 Life of, XIII. 758.
 —(General), on Hannibal's route
 over the Alps, VI. 293, n.

MEL—MEN

Melville (James), XIV. 489, n.
 —(Sir JAMES), XIV. 489.
 —(Lord). See Dundas (Henry).
 —(Mr), on the colour of clouds, VII.
 39.
 —BAY, XIV. 490.
 —Island, in North America, XVIII.
 171, 178—flowering plants of, XVII. 626
 —coal in, XVIII. 180—climate of, II.
 674.
 —ISLAND, on the coast of Australia,
 XIV. 490.
 Melyrides, family of insects, IX. 111.
 Melyris, genus of insects, IX. 111.
 Mem de Sa, V. 281.
 Membracis, genus of insects, IX. 170.
 Membranes of the human body, II. 765—
 serous, 838—mucous, ib.—synovial, 840
 —cerebral, III. 56.
 MEMEL, Prussian seaport, XIV. 490.
 —river, XVI. 263. See Niemen.
 MEMMI, or Di Martino (Simone), XIV. 490.
 MEMMINGEN, town of Bavaria, XIV. 491.
 MEMNON, XIV. 491; XI. 387 and n. 11.
 —a governor of Thrace, XIV. 493.
 —Greek historian, XIV. 493.
 —(Statue of), VIII. 510.
 —the Rhodian, XIV. 492.
 Memnonium at Thebes, VIII. 509; XIV.
 492.
 Memorandum, in marine insurance, XII.
 422.
 Memory, XIV. 576, 577—its improvement
 in the blind, IV. 777, 778—Condillac on,
 VII. 234—artificial means of assisting,
 XV. 285—dependent on the state of the
 body, 286.
 MEMPHIS, in Egypt, XIV. 493—architec-
 ture of, III. 437—taken by Cambyes,
 VIII. 465—necropolis of, 499—site of,
 502—pyramids at, 437.
 —in Tennessee, XIV. 493; XXI. 156.
 Memphitic versions of the Bible, IV. 700.
 Memphremagog, lake, XXI. 550.
 Memrulinaceæ, XXI. 1005.
 MENA (Juan de), Spanish poet, XIV. 493;
 XVIII. 113.
 Menæchmus, geometer, VII. 249; X. 499.
 MENAGE (Gilles), XIV. 493—his Table-
 talk, II. 738.
 MENAI STRAIT, XIV. 494—suspension
 bridge, I. 875; XXI. 146—tubular
 bridge, XII. 607.
 MENAM, or Meinam, river of Siam, XIV.
 494; XX. 232.
 MENANDER, XIV. 494—his dramas, VIII.
 141.
 Menangcabau, in Sumatra, gold and iron
 ore of, XX. 804—iron and steel manu-
 factured at, 805.
 MENASSEH (Ben Israel), XIV. 495.
 Mencherès, Egyptian king, VIII. 455.
 Mendana (Alonso de), his discovery of
 Solomon's islands, IV. 264.
 —islands, XIV. 313.
 MENDE, French town, XIV. 495.
 MENDELSSOHN (Bartholdy Felix), XIV. 495.
 —(Moses), XIV. 496.
 Menderé, river in the plain of Troy, XXI.
 356.
 Mendez (Alphonzo), II. 56.
 —PINTO (Ferdinand), XIV. 497.
 Mendicancy, XVIII. 295—compared with
 pauperism, 298—extent of, in England,
 ib.
 MENDICANTS, or Begging Friars, XIV. 497
 —at Benares, IV. 644.
 —their proportion to the population,
 in France, X. 268—formerly in Ireland,
 XVIII. 298.
 MENDIP HILLS, XIV. 497; XX. 410—silver
 from, ib.
 Mendipite, mineral, XV. 105.
 Mendizabel, XX. 479.
 Mendosoma, genus of fishes, XII. 288.
 MENDOZA (Diego Hurtado de), XIV. 497
 —poetry of, XVIII. 113—his romances,
 XIX. 286.
 —(Don Pedro de), XVII. 780.
 —(Francis), on aeronautics, II. 167.
 —(INIGO LOPEZ DE), XIV. 498.
 —(Jorge de), V. 727.
 —in La Plata, XIV. 499; XVII. 779.

MEN—MER

Mendoza river, XIV. 499.
 MENDRISO, Swiss town, XIV. 499.
 Mene, genus of fishes, XII. 299.
 MENEDMUS, Greek philosopher, XIV. 499.
 MENEHOULD (Sainte), French town, XIV.
 500.
 MENELAUS, king of Lacedæmon, XIV. 500.
 —astronomer, X. 501.
 Menenius Agrippa, XIX. 299.
 MENES, founder of the Egyptian empire,
 XIV. 500; VIII. 454.
 Meneses (Don Torge de), Papua discovered
 by, IV. 262.
 Menestheus, IV. 193.
 Menetries (E.), his work on insects, IX.
 20.
 —(J. F.), his work on insects, IX. 21.
 MENG-TSEU, Chinese philosopher, XIV.
 500.
 Mengin (Felix), on the Wahabys, III. 364,
 n. 1.
 Mengite, mineral, XV. 101, 111.
 MENGES (Antony Raphael), painter, XIV.
 500; XVII. 69.
 Menilite, mineral, XV. 69.
 MENIN, town of Belgium, XIV. 501.
 MENIPPUS, Cynic philosopher, XIV. 501.
 Menispermaceæ, nat. order of plants, V. 181.
 MENNO (Simonis), XIV. 501.
 Mennonites, sect, XIV. 501; II. 743—in
 Prussia, XVIII. 664.
 Menobranchus, genus of reptiles, XIX. 84.
 Menopoma, reptile, XIX. 84—cranium,
 upper jaw, and teeth of, XVI. 430.
 Menotti (Ciro), XII. 655.
 Menou (Abdallah), V. 583.
 —(General), VIII. 489; X. 96.
 Menptah, Egyptian king, VIII. 462.
 Menschikoff (Prince), XIX. 500.
 Menstruation, XVII. 682.
 MENSURATION, XIV. 502. See Measure-
 ment.
 MENTAL DISEASES, XIV. 526—mental
 alienation, 426. See Dæmoniac, In-
 sanity, Brain.
 —philosophy, Bacon's reflections on,
 I. 32—its advancement promoted by
 the improvement of language, 39—
 Aristotle's, III. 548—applications of
 phrenology to, XVII. 565. See Ethical
 Philosophy, Metaphysics, Moral Phi-
 losophy, Phrenology, Brain, Ideas,
 Memory, &c.
 Mental, the thoracic duct observed by, II.
 761.
 Mentelin, early printer, XVIII. 532.
 MENTSCHIKOFF (Alexander), XIV. 540;
 VI. 333; XIX. 478, 480.
 MENTZ. See Mayence.
 Menu on Hindu penance, XI. 469.
 Menura, genus of birds, XVI. 754.
 MENZELER, lake, XIV. 540; VIII. 429;
 XX. 789.
 Menzies (Michael), his invention of the
 thrashing-machine, II. 262.
 Meonite, mineral, XV. 72.
 Mephitis, genus of mammalia, XIV. 157.
 Mephitis, death from, XIV. 430.
 MEPPEL, town in Holland, XIV. 540.
 MEQUINEZ, town in Morocco, XIV. 540.
 Mercantile axioms, VII. 192.
 —system of political economy, VII.
 192, 194; IX. 436; XVIII. 214.
 —navy, XX. 28, 29—state of, at dif-
 ferent periods, 119, 124, 127, 130, 134,
 137, 138—of Tuscany, XXI. 394.
 MERCARA, town in India, XIV. 540.
 MERCATOR (Gerard), geographer, XIV.
 540; X. 495; XVI. 4.
 —(NICOLAS), XIV. 540.
 Mercator's chart, X. 495, 488; XVI. 4;
 VI. 426; X. Plate.
 —sailing, XVI. 16.
 Mercenaries, Carthaginian war with the,
 VI. 290—in the continental armies in
 the eleventh century, VIII. 667, n.
 Mercer's Hall, London, XIII. 677.
 Merchant Company, Edinburgh, VIII. 403.
 —Maiden Hospital in Edinburgh,
 VIII. 402.
 —seamen, XX. 28.
 —service, table of steamers in XX.
 669.

MER—MER

Merchant Tailors' Hall, London, XIII. 678
 —school, 667.
 Merchants, their character, VII. 197—un-
 accustomed to general views, 198—open
 to erroneous impressions, ib.—their
 opinion of the usury-laws, 199—health
 of, XIV. 442.
 Merchants' House, Glasgow, X. 653.
 MERCIA, XIV. 540; VIII. 658.
 MERCIER (Louis Sebastien), XIV. 541.
 —de la Riviere, VIII. 376.
 MERCURIUS, Roman divinity, XIV. 541—
 caduceus of, VI. 51. See Hermes.
 Mercury, planet, IV. 65, 89—phenomena
 of, 51—disturbances of its orbit, 106—
 theory of its motion, 89—transits of, 62,
 63.
 —a metal, VI. 497; XV. 65, 114—
 —discovery of the congelation of, I.
 759—sometimes rendered solid in nor-
 thern countries by the natural cold of
 the atmosphere, VII. 100; XIII. 236—
 employed in the barometer, IV. 450 *et*
seq.; and thermometer, 457—coefficient
 of expansion of, I. 957—method of com-
 puting its depression in barometers,
 VI. 216—Hutchin's experiments on the
 degree of cold at which it freezes, 352
 —its cohesion, VII. 57—table of its
 depression in glass tubes, VI. 219; VII.
 65—congelation of, 107—specific gravity
 of, XII. 88—its phenomena in capillary
 tubes, 94—poisoning with, XIV. 433;
 antidotes and means of detection, ib.—
 mode of combining it with other metals,
 II. 647—imports of, XV. 238—in Cali-
 fornia, VI. 98—mines of, XV. 237; in
 Bavaria, IV. 517—Europe, IX. 387—
 Idria, XII. 357—Peru, XVII. 471—
 Spain, XX. 489—its action as a poison,
 XVII. 702—solution of, called *quicksilver*
water, X. 626—fulminating, XVIII. 707
 —advantages of, for thermometers,
 XXI. 221.
 —Trismegistus. See Hermes.
 Méré (Chevalier de), on probability, XVIII.
 598.
 Meredith (Sir William), V. 474.
 Mereweather (Mr), his history of boroughs,
 XV. 683 n., 684.
 Mergansers, birds, XVI. 819.
 MERGUI, town in Hindustan, XIV. 541.
 Mergus, genus of birds, XVI. 819.
 Meria, genus of insects, IX. 195.
 MERIAN (Jean Bernard), XIV. 541.
 —(MARIA SIBYLLA), XIV. 542—her
 work on the insects of Surinam, IX. 3.
 —(MATTHEW), painter, XIV. 542.
 MERIDA, town in Spain, XIV. 542.
 —town in Venezuela, XIV. 542.
 —town in Mexico, XIV. 542.
 Meridian, IV. 1; X. 480, 465—first meri-
 dian, XIII. 685—of globes, X. 485—
 circles, IV. 153—to trace a meridian
 line on any plane, VII. 787.
 Meridional mounting of telescopes, XXI.
 143.
 Merino sheep, introduced into England,
 II. 263; VIII. 724—in France, X. 248
 —wool of, XXI. 905; efforts to produce
 it in England, 910.
 —(Martin), his attempt to assassinate
 the Queen of Spain, XX. 483.
 Meriones, genus of mammalia, XIV. 182.
 MERIONETHSHIRE, XIV. 543—population
 and value of property, VIII. 754—auri-
 ferous rocks in, XV. 233.
 Merit, popish doctrine of, XVIII. 336.
 Merlangus, genus of fishes, XII. 270.
 MERLIN (Ambrose), wizard, XIV. 544.
 —bird, XVI. 745.
 —in fortification, IX. 807.
 —(THE WILD), wizard, XIV. 544.
 Merluccius, genus of fishes, XII. 270.
 Mermaid, XIV. 217—in heraldry, XI. 334.
 Merman, XIV. 217.
 Merodon, genus of insects, IX. 241.
 MEROE, island, XIV. 545.
 Merom, lake, XVII. 185.
 Meromyza, genus of insects, IX. 257.
 Merops, genus of birds, XVI. 772.
 Merou, genus of fishes, XII. 276.
 Merovæus, X. 2.

MER—MET

Merovingian dynasty, X. 2, 239.
 MERRICK (James), poet, XIV. 545—on the Greek poet Tryphiodorus, XXI. 362.
 Merrimac, river, XIV. 340.
 MERRY (Robert), XIV. 545.
 Merrythought, bone of birds, III. 86.
 Merse, IV. 679. See Berwickshire.
 MERSEBURG, town of Prussia, XIV. 545.
 MERSENNE (Marin), XIV. 545; XVI. 533—his opposition to Pascal, IV. 451.
 MERSEY, river, XIV. 546; VI. 529; VIII. 716; XIII. 177—quantity of matter suspended in the water of, XVI. 86—physical characteristics of, 84.
 —screw steam-frigate, XX. 665.
 Mertæ, Caledonian tribe, VI. 74.
 MERTHYR TYDVIL, XIV. 546—iron-works near, X. 642.
 Merton College, Oxford, XVII. 35; XXI. 459.
 MERV, or Meru, town in Turkestan, XIV. 546.
 Meryx, genus of insects, IX. 142.
 Merz and Mahler (Messrs), their telescopes, XXI. 121, 122.
 Mesembrina, genus of insects, IX. 249.
 Mesembryanthemaceæ, nat. order of plants, V. 194—region of, 228; XVII. 629.
 Mesh of nets, IX. 638; XIX. 89, 91, 92.
 MESHEP, or Mushed, Persian town, XIV. 546—valley of, XIII. 78.
 Mesitine-spar, XV. 92.
 MESJID, or Musjeed, Ali, Turkish town, XIV. 546.
 —HOSSEIN, XIV. 546; XIII. 71.
 MESMER (Friedrich Anton), XIV. 547; XX. 416.
 Mesmerism, IV. 374; XIV. 465; XX. 413, 416—mesmeric mania in Britain, 441.
 Mesocarp, in botany, V. 135.
 Mesoderma, genus of mollusks, XV. 350—fossil, XVII. 108.
 Mesogaster, genus of fossil fishes, XII. 346.
 Meso-Gothic language, XIII. 210, 211.
 Mesole, mineral, XV. 75.
 Mesolite, XV. 75—pyro-electricity of, VIII. 560—its use in micrometers, XIV. 744.
 MESOLONGHI, XIV. 547—siege of, in 1826, XI. 29—death of Lord Byron at, 28; VI. 40.
 Mesophloeum, in plants, V. 82.
 Mesopithecus, fossil mammal, XVII. 167.
 MESOPOTAMIA, XIV. 548; IV. 364.
 Mesoprion, genus of fishes, XII. 276.
 Mesotype, XV. 75—pyro-electricity of, VIII. 560.
 Mesozoic epoch, in geology, XV. 195, 205; XVII. 587.
 Mesphres, XI. 386.
 Mespilus, genus of plants, XVII. 763.
 Messalina, XIX. 336; XX. 45.
 MESSALLA (C. Marcus Valerius), XIV. 548.
 MESSANA, or Messene, town in Sicily, XIV. 548—coins of, XVI. 366.
 Messance (M.), on the population of France, XV. 602.
 MESSENE, town in Greece, XIV. 549.
 Messengers-at-Arms, XI. 321.
 MESSENLIA, in Greece, XIV. 549; XI. 13—coins of, XVI. 372—subdued by the Spartans, XX. 499.
 Messenian wars, XX. 499, 501.
 MESSIAH, XIV. 549; XXI. 207; VI. 634—meaning of the word, I. 480, n. 1—Jews' expectation of a millenium under the reign of, XV. 13.
 MESSIER (Charles), XIV. 549—on the solar spots, IV. 28, 29.
 MESSINA, in Sicily, XIV. 550; XX. 255—straits of, 241—Fata Morgana, in the straits of, IV. 490; XX. 41—university of, XXI. 492.
 Mestizos of Mexico, XIV. 719—of Peru, XVII. 474.
 MESTRINO (Nicolo), violinist, XIV. 550.
 Mesue, ancient physician, XX. 815.
 Meta, South American river, VII. 133; XXI. 716.
 Metacarpal bones, in man, III. 33—in the mammalia, 81—in birds, 86.

MET—MET

Metacentre, XII. 83; XX. 154.
 Metachlorite, mineral, XV. 78.
 Metagelatin process, in photography, XVII. 549.
 Metallic couples, thermo-electric power of, XXI. 650.
 —colours, XV. 59—stones, 90.
 —produce of the world for 1854, XV. 248; and its value, 249—poisons, XIV. 432—barometer, IV. 460—money, XV. 416.
 —polarisation, I. 914; XVI. 541, 683.
 —salts, in sea-water, XVII. 572.
 Metalloids, VI. 438, 455, 471.
 Metallurgy, knowledge of, in northern Europe, derived from foreign sources, III. 431—of lead, XIII. 398.
 Metals, in chemistry, VI. 482 *et seq.*—in mineralogy, XV. 60, 65, 113—alloy of, II. 595—annealing of, III. 218; XX. 756—distinction between cast and malleable, III. 219—influence of heat on the electric fluid in, VIII. 561—their diffusion into vapour by electricity, 589—fusion and oxidation of, by electricity, 592, 593—revival of oxides of, 593—magnetism of, XIV. 26—gilding of, X. 625—their power of conducting heat, XI. 261—expansion of, by heat, 268—operations depending on their contraction by cooling, 269—their poisonous qualities, XIV. 432 *et seq.*—films on, XVI. 603—colours of, 686; VI. 482—polarisation in, XVI. 542—distribution of, XVII. 620 *et seq.*—cohesion and strength of, XX. 756—their tenacity increased by mixtures, 757—different conducting power of metals for different electricities, XXI. 621—coloured rings formed on, by voltaic currents, 632—multiplication of works of art in metal by voltaic electricity, 635—thermo-electricity developed in, 649, 650—conductibility of, for thermo-electricity, 651, 652. See Precious Metals, Gold, Silver, Iron, &c.
 Metamerie bodies, XII. 630.
 Metamorphic rocks, XV. 130, 150, 153; XVII. 587—schistose, XV. 154—classification of, 155—in Scotland, XIX. 792—as building-stones, XX. 712.
 Metamorphoses of insects, IX. 52.
 METAPHOR, XIV. 550; IV. 547, 548; XIX. 132 *et seq.*
 Metaphysical, misapplication of the term, I. 228—influence of metaphysical studies, ib.
 Metaphysicians on the nature and essence of the soul, I. 57—of the eighteenth century, 114—their enumeration of the mental faculties, XVII. 673.
 METAPHYSICS, XIV. 551—little advance made in, before the seventeenth century, I. 20—progress of, in the eighteenth century, 227—change in the meaning of the word since the publication of Locke's Essay, ib.—benefits arising from the study of, 228—the term affords a specimen of all the faults which the name of a science can combine, 310—abstraction in, II. 52—Aristotle on, III. 541—speculative inquiries of the Athenians, IV. 211—much cultivated in India, V. 271—Kant on, XIII. 46. See Mental Philosophy.
 METAPONTUM, in Magna Græcia, XIV. 625—coins of, XVI. 363.
 Metarsus in birds, III. 86.
 METASTASIO (Pietro), XIV. 625—his tragic operas, VIII. 147.
 Metatarsal bones, III. 36.
 Metaurus, battle of, XIX. 311.
 Metâwileh, followers of Aly, XX. 908.
 Metaxas (M.), on the debt of Greece, XI. 20.
 Metaxite, mineral, XV. 79, 80.
 Metayer system of farming, in France, X. 245, 249; Greece, XI. 15; Lombardy, XIII. 650; Tuscany, XXI. 394.
 Metcalfe (Rev. F.), on the Lofoden fishery, XVI. 327.
 —(Lord), governor of Jamaica, XII. 674—his law of 1835 relating to the newspaper press in India, XVI. 204.

MET—MEX

METELLUS, Roman family, XIV. 627.
 —Quintus Cæcilius Macedonicus, XIV. 627.
 —Celer, ib.
 —Numidicus, ib.
 —Pius, ib.
 —Pius Scipio, ib.
 METEMPSYCHOSIS, XIV. 628; XVIII. 711—a favourite tenet of the Hindus, XI. 470—taught by the Druids, VIII. 184.
 Meteora, rocks of, XI. 12.
 Meteoric iron, VI. 488; XV. 114—fragments of, in the British Museum, XIV. 635. See Meteorolite.
 METEOROLITE, XIV. 629—cause of them hitherto inexplicable, I. 580—Fusinieri on the origin of, VIII. 584.
 METEOROLOGY, XIV. 636; XVII. 571—proposed use of balloons in, II. 184—influence of forests and mountains on climate, 671, 672—rain most abundant in elevated land, 671—Leslie's atmosphere, IV. 177—electricity of the atmosphere, VIII. 577—fire-balls and falling stars, IX. 586—great hail storm in France, X. 48—Harmattan wind, XI. 229—optical, XVI. 688—sea and land breezes in Sumatra, XX. 803—list of works on, XIV. 689. See Atmosphere, Barometer, Climate, Cold, Cloud, Dew, Evaporation, Fog, Hall, Hygrometry, Monsoon, Rain, Rainbow, Snow, Wind, &c.
 Meteors, XIV. 684—Chaldni on, I. 892—Descartes' Treatise on, VI. 279—description of one seen at Windsor, 345. See Meteorolite.
 Meter (gas), X. 422.
 METHODISTS, XIV. 691; IX. 395—origin of the name, XIV. 454—their places of worship in England and Wales, VIII. 745—in Ireland, XII. 532. See Wesley, Whitefield.
 METHUDIUS, XIV. 694.
 —THE CONFESSOR, XIV. 694.
 METHONE, city of Messenia, XIV. 695.
 Methvin treaty of Great Britain with Portugal, VII. 193.
 Metis, planet, IV. 91.
 METIUS (Adrian), XIV. 695; X. 504—on the quadrature of the circle, XX. 521.
 —(James), alleged inventor of the telescope, XVI. 527.
 Métivier (Comte de), his work on insects, IX. 24.
 METON, astronomer, XIV. 695; III. 788; VI. 665.
 Metonic cycle, in chronology, III. 788; VI. 79, 665; VII. 607.
 METONYMY, in rhetoric, XIV. 695.
 Metope, III. 510.
 Metopius, genus of insects, IX. 190.
 Mètre, French measure, X. 284; XXI. 805.
 Metrodorus, Greek painter, XVII. 57.
 METRONOME, XIV. 695; VI. 710; XIX. 150—pendulums, XVII. 386.
 Metternich (Prince), his policy, IV. 305, 306, 307; X. 162.
 METTIE (Julien Offray de la), XIV. 695.
 METZ, town of France, XIV. 696—aqueeduct of, III. 335—population, X. 277.
 METZENSEIFEN (OBER and UNTER), villages in Hungary, XIV. 696.
 METZINGEN, in Wurtemberg, XIV. 696.
 METZU (Gabriel), painter, XIV. 696.
 Meunier, his attempt to assassinate Louis Philippe, X. 213.
 MEURSIUS, or De Meurs (John), XIV. 696.
 MEURTHE, in France, XIV. 697.
 —river, XIV. 697.
 MEUSE, in France, XIV. 697.
 —river, XIV. 698; IV. 611; XI. 581.
 MEUSEL (Johann Georg), XIV. 698—notice of his Bibliotheca Historica, IV. 714.
 Meusnier (M.), his method of adjusting balloons, II. 173.
 Mevelavites, dervises, VII. 757.
 Mewar, in India, XVI. 515.
 Mexicans, their character and appearance, II. 684—affinity with Asiatics, 695—tradition of the Deluge, VII. 719.

MEX—MIC

—anthropophagy among the ancient, III. 270—picture-writing, II. 684.
 MEXICO, XIV. 698; II. 633, 705—climate of, 673—mountains of, 674—civilisation of, 685—revolution in, 702—ancient architecture of, III. 438—castes in, VI. 316—government of, under the Spaniards, XIV. 707—conquest of, by Cortes, VII. 418—dancing in, 644—French trade with, X. 260—volcanoes, XVII. 593—height of mountains in, 645—jalap plant, XII. 671—libraries, XIII. 430—silver mines of, XV. 235; XVII. 622—monarchy, XV. 413—mythology, 767—produce of precious metals, XVIII. 461; XV. 248—Prescott's History of the Conquest of, 504, 506—war with the United States, XXI. 442—weights and measures, 812—map of, XIV. Plate.
 —city of, XIV. 722.
 —Gulf of, XVII. 577.
 —New, XIV. 729—ceded to the United States, 714—language of, XIII. 222.
 Meydoom, pyramid of, VIII. 503.
 Meyen, on zones of vegetation, V. 225, 227.
 —(Dr), on the pilot fish, XII. 294.
 —(Prof. F. T.), on the structure of animalcules, III. 208.
 Meyer (Dr Charles), on Celtic philology, XVII. 530.
 —(FELIX), painter, XIV. 730.
 —(JACQUES), XIV. 730.
 —(JOHANN HEINRICH), XIV. 730.
 —(Moritz), on metal for cannon, VI. 178.
 —(M. Von), on fossil animals, XVII. 133 *et seq.*
 —(Prof.), his theory of apparitions, III. 315—his opposition to Dr Joseph Black's view of the nature of quicklime, IV. 738.
 Meyer's elliptic lamp, XIII. 172.
 Meyeria, fossil lobsters, XVII. 102.
 Meynell's system of hunting, XII. 35.
 MEYRICK (Sir Samuel Rush), XIV. 730.
 MEYWAR, XIV. 731; XVI. 515.
 MÈZE, French seaport, XIV. 731.
 Mezen, river, XIX. 516.
 MEZERAI (F. Eudes de), XIV. 731.
 Mezereon, order of plants, V. 205.
 MEZIÈRES, town in France, XIV. 731—engineering school of, IX. 821.
 MEZO BERENY, town in Hungary, XIV. 731.
 —HEGYES, Hungarian village, XIV. 731.
 —KOVESD, Hungarian town, XIV. 731.
 —TUR, Hungarian town, XIV. 731.
 Mezomorto, dey of Algiers, II. 571.
 Mezzanine, in architecture, III. 510.
 MEZZOFANTI (Joseph Caspar), cardinal, XIV. 731.
 MEZZOTINTO engraving, XIV. 733; VIII. 799, 800; XIX. 465—on steel, VIII. 810—invention of, XX. 270.
 M'Glashen's tree-lifter, XI. 696.
 MGLIN, town in Russia, XIV. 734.
 MIAKO, or Miaco, city in Japan, XIV. 734.
 Miami, river, XVI. 489.
 Miargyrite, mineral, XV. 122.
 MIAVA, Hungarian town, XIV. 734.
 Mica, XV. 77—in granite, 136—decomposition of, II. 390—analysis of, ib.—soils from, ib.—used for window glass, X. 658—magnetism of, XIV. 27—its use in the polarisation of heat, XI. 267; I. 957 and n. 2.
 —schist, XV. 154—its distribution in Scotland, XIX. 792—in Sutherland, XX. 841.
 MICAH, prophet, XIV. 734.
 MICHAEL I. (Rhangabe), emperor, XIV. 734; VII. 313.
 —II., BABBUS, XIV. 735.
 —III., XIV. 735.
 —IV., THE PAPHLAGONIAN, XIV. 735.
 —V., CALAPHATES, XIV. 735.
 —VI., STRATIOTICUS, XIV. 735.
 —VII., PARAPINACES, XIV. 735.

MIC—MID

- MICHAEL VIII., Palaeologus, XIV. 735; VII. 318.
 — (St), island, IV. 335.
 — (Sr), one of the Azores, XIV. 735; IV. 335.
 — (St), order of, XI. 340; XIII. 120, 111; XII. 448.
 MICHAEL'S MOUNT (St), XIV. 735.
 MICHAELIS (Johann David), XIV. 735; XVII. 533—his works on biblical criticism, XIX. 828.
 MICHAELMAS, XIV. 736—Oxford and Cambridge term, XXI. 458, 463.
 Michaud on the Crusades, VII. 536.
 MICHAUX (André), botanist, XIV. 736.
 MICHEL ANGELO BUONARROTI, XIV. 736; XIX. 862—his architectural works, III. 452—his style of painting, 708, 709; XVII. 64—his genius, VIII. 171—compared with Raffaele, XVII. 67.
 Michelet on Aristotle's metaphysics, XIV. 553, n. 3—on Richelieu, XIX. 164—his translation of Vico's *Scienza Nuova*, XXI. 582.
 Michelinia, fossil corals, XVII. 97.
 Michell (Rev. John), his apparatus for experimenting on the density of the earth, VI. 353, 354—on magnetism, XIV. 4—his artificial magnets, 690.
 Michelotti (Ignazio), on hydraulics, XII. 112.
 — (Prof.), on hydrodynamics, XII. 72, 112, 113, 115; XIX. 187, 189.
 MICHELOZZI (Michelozzo), XIV. 738.
 Michie (Mr.), of Nine Elms, his vertical steam-engines, XX. 611.
 MICHIGAN, North American state, XIV. 739; XXI. 419—debt of, 428—wine, 888.
 — LAKE, XIV. 740; XVII. 605.
 MICIPSA, king of Numidia, XIV. 741; XIII. 15.
 MICKIEWICZ (Adam), Polish poet, XIV. 741.
 MICKLE (William Julius), XIV. 742.
 MICON, Athenian artist, XIV. 742.
 Miconi, island. See Mycone.
 Micraster, fossil echinoidea, XVII. 100.
 Microcephala, family of insects, IX. 104.
 Microconchus, fossils, XVII. 101.
 Microdactylus, genus of birds, XVI. 797.
 Microdon, genus of insects, IX. 238—of fossil fishes, XII. 337.
 Microdonophis, genus of fishes, XII. 232.
 Microgaster, genus of insects, IX. 188.
 Microglossus, genus of birds, XVI. 783.
 Microlichtys, genus of fishes, XII. 275.
 Microlestes, fossil mammal, XVII. 157.
 MICROMETER, XIV. 742; XXI. 119—discovery of, by Huygens, I. 612—Cavallos', VI. 346—Maskelynes', XIV. 336.
 Micrommata, genus of arachnides, III. 381.
 Micronesians, in ethnology, IX. 347.
 Micropeplus, genus of insects, IX. 104.
 Micropeza, genus of insects, IX. 253.
 Microphis, genus of fishes, XII. 316.
 Micropyle, in botany, V. 133, 139.
 MICROSCOPE, XIV. 763—wonders disclosed by, III. 197—its utility in science, 198; in medicine, XIV. 464; in anatomy, II. 768—gardeners' portable, V. 66—invention of, XVI. 524, 529; I. 627; X. 376—mirrors for, XVI. 576—micrometers for, XIV. 760—magnifying power of, XVI. 598.
 Microscopic animals, III. 193—microscopic photographs, XVII. 552.
 — finder, XIV. 783.
 Microstoma, genus of fishes, XII. 250.
 Microtherium, genus of fossil mammals, XVII. 165.
 MIDAS, XIV. 807.
 Middle Ages, intellectual darkness of, I. 14—armies of, III. 635—drama of, VIII. 143—education in, XV. 808—fables of, IX. 462—historians of, XI. 548—agriculture during, II. 251—progress of geography during, X. 468—libraries of, XIII. 386—funerals of the nobility and gentry during, XI. 341—coins of, XVI. 385—chronicles of, VII. 535—rate of interest during, XII. 428—painting,

MID—MIL

- XVII. 60—pantheism, 233—philology, 520—poetry, XVIII. 108—presbyterianism, 485—history of the city of Rome in, XIX. 365—masonry, XX. 710, 733—window tracery, 734—vaulting, ib.—spires, 735.
 Middle Temple, XII. 384.
 MIDDLEBURG, in Holland, XIV. 807—settlement of the Brownists at, V. 688—captured by the Prince of Orange, XI. 568.
 — island, IX. 266.
 MIDDLESBOROUGH, in Yorkshire, XIV. 807.
 MIDDLESEX, XIV. 807—population and value of property, VIII. 754.
 — Hospital, London, XIII. 673.
 MIDDLETON (Conyers), D.D., XIV. 809—accused of plagiarism towards Bellen-den, IV. 637—his quarrel with Bentley, 659—on the classification of books, 715, 716—controversy excited by his Inquiry into the Miraculous Powers of the Christian Church, XXI. 729.
 — (Captain), voyage of, XVIII. 169.
 — (Sir Hugh), XIV. 810, 808; VIII. 647; XIII. 664.
 — (THOMAS), XIV. 810.
 — (THOMAS FANSHAW), D.D., XIV. 811.
 — in Lancaster, XIV. 811.
 — in Ireland, XIV. 811.
 — Moor, limestone with chert nodules at, XV. 147.
 Middleton's perfecting machine, XVIII. 559.
 Middletonite, mineral, XV. 124.
 MIDDLETOWN, in Connecticut, XIV. 811.
 MIDDLEWICH, in Chester, XIV. 811.
 MIDHURST, in Sussex, XIV. 811.
 Mid-Lothian. See Edinburghshire.
 MIDNAPOOR, in Bengal, XIV. 811.
 Midshipman, XVI. 102, 105.
 Midwifery, XIV. 461—use of chloroform in, VI. 629, 630.
 Miecislus, Polish kings, XVIII. 137, 138, 140.
 MIEL (Jan), XIV. 811.
 MIERIS (Francis), XIV. 812.
 — (FRANCIS), junior, XIV. 812.
 — (WILLIAM), XIV. 812.
 Miers (Mr.), on the Andes, II. 669.
 Miesite, mineral, XV. 106.
 Mignan (Capt.), on the ruins of Babylon, IV. 345.
 MIGNARD (Nicolas), XIV. 812.
 — (PIERRE), XIV. 812.
 MIGNON, or Minion (Abraham), XIV. 812.
 Mignonette order of plants, V. 182.
 Migration of animals, XII. 329—of birds, XVII. 633—fishes, 635—of herring, XII. 235, 329.
 Miguel (Don), V. 289; XVIII. 389, 390.
 MIHEL (St), French town, XIV. 812.
 Mikalitz, town in Turkey, XV. 674.
 Mikhail, king of Russia, XIX. 475.
 MILAN, XV. 1; XII. 645—academy of sciences at, II. 63—academies of architecture and the arts, 68—government of, XIII. 644—cathedral, III. 448—Ephemeris, 815—Ambrosian library at, XIII. 413—Napoleon's decree at, X. 149—ancient writings discovered at, VI. 744, 745—irrigation near, XIII. 648—insurrection at, in 1848, XII. 657—pavement of the streets, XIX. 224—live-stock in the territory of, XIII. 649, 650—imperial institution of, XII. 661—early printing at, XVIII. 533—school of painting, XVII. 72, 73—production of silk in the province of, XX. 278. See Mediolanum.
 Milano (Joannes de), a poem, Regimen Sanitatis Salernitanum, ascribed to, XX. 816.
 MILAZZO, or Melazzo, town in Sicily, XV. 4, 746.
 MILBORNE PORT, in Somerset, XV. 4.
 MILDENHALL, in Suffolk, XV. 4.
 Mildew, V. 172—method of protecting garden peas from, XI. 738.
 Mileage of railway stock, XVIII. 784—mileage run by engines, ib.
 Miles, XIII. 112.

MIL—MIL

- Millesia, genus of insects, IX. 239.
 MILETUS, XV. 4—architectural remains at, III. 442.
 Milfoil, plant, V. 197.
 MILFORD, in Wales, XV. 5.
 — HAVEN, XV. 5; VIII. 721; XVII. 374.
 MILHAU, town in France, XV. 5.
 Milichia, genus of insects, IX. 257.
 Milolite limestone, XXI. 1007.
 MILITARY FRONTIER, XV. 5.
 — Academy at Woolwich, II. 71.
 — College (Royal), II. 71.
 — forces of the European States, IX. 398.
 — or martial law, XV. 5.
 — science, XXI. 698—terms used in, 702—military training of the people, 699.
 — tenures. See Feudal System, Chivalry, Knights and Knighthood.
 MILITIA, XV. 6—British, III. 666; V. 517, 518—Irish, XII. 524—of United States, XXI. 430.
 — Act, V. 605.
 MILIZIA (Francesco), architect, XV. 10.
 MILK, XV. 10—cow's, VII. 624—horse's, XI. 639—rein-deer's, XIII. 239—chemical composition and properties of, VI. 523—animalcules found in, III. 210—influence of food on the qualities of, VII. 621—average annual yield per cow, 622—adulteration of, IX. 769—use of, unknown to the Chinese, VI. 589—sugar of, VIII. 47. See Dairy.
 Milk-quartz, XV. 69.
 Milk-teeth, III. 26.
 Milk-tree, X. 367. See Cow-Tree.
 Milkweed order of plants, V. 199.
 Milkwort order of plants, V. 183.
 Milky Way, I. 842, 843, 844; IV. 86; X. 369—all visible stars belong to that system, I. 845.
 MILL (James), XV. 11—in treating of benevolence, has overlooked the delight from virtuous conduct, I. 396—his theory of government, 401—on education, ib.—on custom as a form of law, XIII. 258—on the civilisation of the Hindus, XI. 547—on British India, 488—on the character of Warren Hastings, 496—his statement of W. Hastings's case, 240—on Sanscrit poetry, V. 270—his article Colony in this work, VII. 134—his defence of commerce, XVIII. 231—on prisons, 564—on the character of Ricardo, XIX. 156.
 — (John Stuart), XV. 13—his work on logic, I. 803—on logic, XIII. 583—on social laws, 263, 264—on the sale of poisons, XX. 800—on the science of human nature, XIII. 263—on propositions in logic, 573, n. 1—on syllogisms, 624, n. 1, 625 n., 627—on Hume's argument on miracles, IX. 417—on fallacies, 476, 478—on statistics, XX. 549, 551, 552.
 — (JOHN), XV. 13—his New Testament, IV. 698; XIX. 837.
 Millar (Prof.), on castes, VI. 315—his account of Adam Smith's lectures, XX. 338.
 — (Walter), XIX. 779.
 Millbank Penitentiary, XVIII. 570.
 MILLEDGEVILLE, in United States, XV. 13; X. 565.
 MILLENNIUM, XV. 13; I. 510—a doctrine of the Koran, 303.
 Millepordæ, XXI. 1005—fossil, XVII. 96.
 MILLER (Hugh), XV. 15—on fossil ferns, V. 235—his classification of Old Red Sandstone rocks, XV. 200—on the Pterichthys, XVII. 120—on the Coccosteus, 122—on Holoptychius, 124—on the geology of Staffordshire, XX. 529.
 — (General), IV. 828.
 — (JOHANN MARTIN), XV. 16.
 — (John), railway bridge at Linton constructed by, XVIII. 762—his viaduct across the Union Canal, 762, 763.
 — (Mr.), on the fall of rain at Seathwaite, XIV. 657.

MIL—MIN

- Miller (Patrick), of Dalswinton, his steamboat, I. 869; XX. 134, 637.
 — (Prof.), his analysis of coal-gas, X. 430—on the fermentation of snuff, XXI. 296.
 MILLERICINUS, fossil echinoderms, XVII. 99.
 Millerite, mineral, XV. 16.
 Miller's safety-poles, XIII. 448.
 Miller's thumb, fish, XII. 280.
 Millers, diseases of, XIV. 443.
 Millesimo, defiles of, X. 100.
 MILLET, XV. 16; XVII. 630—its culture in India, XI. 453—in Bengal, IV. 649.
 Milliar column, VII. 159.
 MILLIN DE GRAND-MAISON (Aubin-Louis), XV. 17.
 Milliners, diseases of, XIV. 442.
 Milling, in woollen manufacture, XXI. 922.
 MILLINGEN (James), antiquary, XV. 17.
 Millington (J.), notice from, regarding Sir Isaac Newton, XVI. 207.
 MILLOT (C.-Francois-Xavier), historian, XV. 17.
 Mills, slow improvement of, III. 706—commonly situated in towns, XIV. 284—fulling or scouring mill, X. 327—of Woltmann, XII. 143; Barker's, 172—lead mill, X. 670—glass-cutter's, 674—rolling mills in iron manufacture, XII. 561—lapidary's, XIII. 231, 232.
 Millstone grit, XV. 203.
 Millstones, rock of the Abbey Craig, near Stirling, well fitted for, VI. 750—of Cairnmore, in Monaghan, XV. 410—of Kirkcudbrightshire, XIII. 99.
 Milman (Dean), his account of Manichæism, XIV. 264.
 MILNE (Joshua), XV. 18—on annuities and assurances, III. 222; XII. 400; XV. 611, 625, 634—his article in this work on human mortality, 600, n.—on the mortality and population of the United States, XVIII. 340, 341.
 — (David), his Essay on Comets, I. 784, n. 1.
 Milne-Edwards (H.), his work on insects, IX. 16—on the blood of the annelides, XI. 292—on the young of terebella, 295—on the mollusca, XV. 319—on the circulating system of the lobster, 357—on the compound ascidians, 331—on polypes, XXI. 1001—his arrangement of the Helianthoida, 1004.
 MILNER (Isaac), XV. 18.
 — (JOHN), XV. 18.
 — (JOSEPH), XV. 18.
 MILNTHORPE, in Westmoreland, XV. 18.
 MILO (T. A. Papianus), XV. 18.
 — island, XV. 19.
 MILON, ancient wrestler, XV. 19.
 Miloschin, mineral, XV. 84.
 MILTIADES, XV. 19; IV. 199.
 Miltogramma, genus of insects, IX. 248.
 MILTON, town in Kent, XV. 19.
 — (JOHN), XV. 20—Bentley's edition of Paradise Lost, IV. 659—on the censorship of the press, 712—examples of comparisons from his poems, VII. 219, 220—anecdote of, VIII. 41—his intimacy with Andrew Marvell, XIV. 324—MSS. of, at Cambridge, XIII. 397—poetry of, XVIII. 92, 95, 122—his definition of the qualities of poetry, 95—first edition of his works, 538—his opinion of Shakespeare, XX. 73—Warton's edition of his minor poems, XXI. 736.
 Milvian bridge, battle of, XIX. 352.
 Milvus, genus of birds, XVI. 743.
 MILWAUKEE, town in Wisconsin, XV. 35.
 Mimetesite, mineral, XV. 106.
 Mimosa bark, imports of, IV. 445—its use in tanning, XIII. 306.
 MINA (Don F. Espoz y), Spanish general, XV. 35; X. 186; XX. 475, 476, 479.
 — (Don Xavier), XIV. 710.
 Mina-bird, XVI. 753.
 MINAS GERAES, in Brazil, XV. 35—population of, V. 295.
 Minas on Fata Morgana, IX. 490; XX. 241.
 MINCHINGHAMPTON, in Gloucester, XV. 36.

MIN—MIN

- MINCIO, river, XV. 36.
 Mind, XV. 537 *et seq.*—phenomena of, entirely different from those of matter, I. 10; relation between them, 124, 125—misapplication of the word substance to, 242, 243—Aristotle on, III. 548—improved by bodily training, VIII. 25—of brutes, V. 703; XI. 762. See Ethical Philosophy, Metaphysics, Mental Diseases, Moral Philosophy, Phrenology, Brain.
 MINDANAO, or Magindanao, island, XV. 36; XVII. 512.
 MINDEN, XV. 36—battle of, V. 498; XXI. 714.
 MINDORO, island, XV. 36; XVII. 512.
 MINEHEAD, in Somerset, XV. 36.
 Miner. See Sappers and Miners.
 MINERAL WATERS, XV. 37—of Aix, II. 431—Carlsbad, VI. 241—Derbyshire, VII. 755—Devonshire, 763—Down, VIII. 122—Germany, X. 584—Leamington, XIII. 303—Malvern, XIV. 119—Moffat, XV. 297—Monaghan, 409—New York, XVI. 215—Papal States, XVII. 242—Pyrenees, XVIII. 700—of Russia, XIX. 549—kingdom of Sardinia, 433, 434—Switzerland, XX. 889—Spa, 457—Teflis, XXI. 193—Tunbridge, 363—Wurtemberg, 938—Wiesbaden, 860. See Baths, and the geographical articles generally.
 —principles, in living bodies, XVII. 655—degeneration, in pathology, 691, 696—concretions, 691.
 —manures, II. 412.
 MINERALOGICAL SCIENCE, XV. 40.
 MINERALOGY, XV. 40—use of the blow-pipe in, IV. 791, 792—crystallization, VII. 545; VI. 445—Dolomieu's classification of minerals, VIII. 97—Hauy on, XL. 244. See Minerals, Geology, Mines.
 Minerals do not grow, III. 169—active molecules found in, 205—Bayens' analysis of, IV. 523—not fitted for nutrition, III. 179—phenomena of, when treated with the blow-pipe, IV. 792, 794—distribution of mineral products, XVII. 618—hardness of, XIII. 231; XI. 226—cutting and polishing, XIII. 231—pyro-electricity of, VIII. 529, 557—electricity of, 538, 539—electricity produced by pressure on, 562; and by cleavage, 564—phosphorescent effects of electricity on, 598, 599—magnetism of, XIV. 26, 27—microscopic cavities in, 806—distinguished from rocks, XV. 131—mineral constituents of timber, XXI. 268—of Cornwall, VII. 407—Europe, IX. 386—of Missouri State, XV. 280—of Prussia, XVIII. 668. See other countries; also Mines, Mineralogy, &c.
 Miners, diseases of, XIV. 442—combinations among, VII. 163—laws relating to, XIV. 349—their tools, XV. 224—effects of want of light on their complexions, XIII. 460.
 MINERVA, XV. 219—ancient statue of, XIX. 854.
 MINES AND MINING, XV. 219—blasting rocks, IV. 755; V. 45—mining pumps, XII. 176; XX. 575 *et seq.*, 611—ancient mines, VII. 188—temperature of, VI. 778—colonization with the object of profit from, VII. 145—damps in, 643—expeditious methods for obtaining the results in cases of complicated directions, VIII. 340—gunpowder for, XI. 152—the proper heat of the globe manifested by the increase of heat in mines, I. 949—circulation of air in mines, XVIII. 77—extraction of noxious air from, 80—application of Hero's fountain to the draining of, 86—mines of America, II. 705—the Andes, III. 129—Austria, IV. 313—Bavaria, 517—Bolivia, 824—Brazil, V. 283, 284—Burmah, 779—Cardiganshire, VI. 233—Chile, 548—Cornwall, VII. 407—Cuba, 566—Cumberland, 577—Derbyshire, 754—Devonshire, 763—England, VIII. 725—France, X. 249—Hayti, XI. 255—Greece, 14—Hungary, XII. 17; IV. 313; V. 46—Illinois, XII. 362—

MIN—MIR

- Ireland, 506, 507—Norway, XVI. 322—Russia, XX. 542, 550—Spain, 489—Sweden, 862—Persia, XVII. 422—Portugal, XVIII. 394—Tibet, XXI. 247. See Precious Metals, Collieries, Gold-mines, Iron-mines, &c., and the geographical articles.
 MINES, military, XV. 249—gunpowder for, XI. 152.
 Minette, rock, XV. 137.
 MINGRELIA, XV. 249—coast of, IV. 745.
 MINHO, river, XV. 249; X. 372; XVII. 647; XX. 487.
 —province, XV. 249; IX. 266.
 MINIATURE PAINTING, XV. 249.
 Minie rifle, XI. 101.
 Mining, XV. 219.
 Minion type, XXI. 401, 403.
 Minion-Nonpareil type, XXI. 401.
 Minium, XIII. 302; XV. 112.
 Mink, in zoology, XIV. 157.
 Minnesingers, poetry of the, XVIII. 118, 264.
 MINNESOTA, in United States, XV. 249.
 Minnow, XII. 256—angling with, III. 156—angling for, 161—its slow growth in confinement, XII. 222, *n.*
 MINOR, in music, XV. 250.
 —a, in law, XVII. 275.
 MINORCA, XV. 250—conquered by the French in 1756, V. 463—captured by the British in 1798, 565—weights and measures, XXI. 812.
 Minorities' iron bridge, XII. 600.
 MINOS, XV. 251; VII. 493—his laws, *ib.*—the warrior, VII. 493.
 Minotaur, XV. 251; IV. 192; XIII. 141.
 Minous, genus of fishes, XII. 283.
 MINSK, in Russia, XV. 251; XIX. 521.
 MINSTREL, XV. 252; XIX. 257 *et seq.*
 MINT, of Great Britain, XV. 253; VII. 68; XIII. 662—ancient constitution of, VII. 73—new constitution of, 81—routine of its business, 84—amount of gold and silver coined at, from 1816 to 1853, 95—amount of money coined at, XIII. 662—mint-mark, XVI. 353.
 —of Bogota, IV. 810—of Paris, XVII. 282—of Sydney, New South Wales, XX. 897—of the United States, XXI. 427.
 —master of the, VII. 80.
 —plant, V. 202—oil of, XVI. 496.
 Minto (Lord), on the State of India, XI. 522.
 —(Lord), his mission to Italy in 1847, XII. 656, 657; X. 230.
 Minton and Co., their porcelain works, XVIII. 437, 441.
 MINUTUS (Felix), XV. 253—his campaign against Hannibal, VI. 295.
 MINUET, dance, XV. 253.
 Minx, in zoology, XIV. 157—its fur, X. 348.
 Miocene period, in geology, XV. 214—flora of, V. 237.
 Mionnet's scale, XVI. 353—his work on ancient medals, 360, 384.
 Miorchinus, genus of insects, IX. 140.
 Mjösen, lake, XV. 253.
 MIRABAUD, (Jean-Baptiste de), XV. 253.
 MIRABEAU, (G. H. de Riquetti, Comte de), XV. 232; X. 41 *et seq.*; XIX. 234—his connection with Cabanis, VI. 45; and with Dumont, VIII. 241, 242—his death and character, X. 59—his friendship with Talleyrand, XXI. 9.
 —(V. R., Marquis de), XV. 262.
 Mirabilite, mineral, XV. 97.
 MIRACLES, XV. 262—pagan, I. 466—necessary to prove a divine revelation, 499; XV. 302—marvellous victory of the thundering legion of Antoninus, III. 280 and *n.*—healing at the pool of Bethesda, IV. 687—considered as conducing to the propagation of Christianity, VI. 638; X. 615, *n.*—Hume on, XII. 7 and *n.* 3; IX. 417; XV. 264—of Jesus, XII. 762—Mohammed made no pretensions to the power of working miracles, XV. 302—miraculous gifts in apostolical times, I. 489.
 Mirage, XIV. 683—in Ireland, III. 285—Egypt, VIII. 422—Beykaneer, IV. 690—

MIR—MIT

- lateral, XVI. 691—now classed with pseudo-apparitions, III. 315.
 MIRAMICHI, river, XV. 267.
 MIRANDA (Don Francisco), XV. 267.
 —(SAA DE), Portuguese poet, XV. 267.
 MIRANDOLA (Giovanni Pico della), XV. 268.
 Mirbel (M.), on the physiology of plants, V. 102.
 MIRECOURT, town in France, XV. 268.
 MIREPOIX, town in France, XV. 268.
 MIREVELT (Michael Jansen), XV. 268.
 MIRGOROD, town in Russia, XV. 268.
 Miriam, sister of Aaron and Moses, XIV. 325.
 Miriki, monkey, XIV. 142.
 MIRROR, XV. 268—colours of, VI. 650—divination by, 339—in kaleidoscopes, XIII. 39—foliating of, IX. 750—burning mirrors, VI. 1; XI. 275; XIII. 451—for lighthouses, paraboloidal, 468; spherical, 471; curved, 474; catadioptric, 478—colours of concave, XVI. 619—mirrors for radiating heat, XI. 262, 275—reflection of light from, XVI. 553, 554—spherical aberration of, 574—cylindrical, 556, 696.
 MIRZAPORE, town in Hindustan, XV. 268.
 MISCOPUS, genus of insects, IX. 195.
 MISENUM, XV. 268.
 MISHNA, XV. 269; XII. 777; XXI. 15, 16.
 MISKOLCZ, town in Hungary, XV. 269.
 Mistletoe, V. 195—cells of, 66—veneration for among the Druids, VIII. 184, 188—time of cutting it, 186—ceremonies at the cutting of it, 184; II. 425.
 —order of plants, V. 195.
 Misphragmuthosis, XI. 387.
 Mispickel, mineral, XV. 115.
 MISSAL, XV. 269; XIII. 516.
 Missel-thrush, XVI. 752.
 Misselden, on political economy, XVIII. 215, 216.
 MISSIONS, RELIGIOUS, XV. 269—in Abyssinia, II. 56—America, 693—Asia, III. 753—China, VI. 570; III. 753—Ceylon, 398—Brazil, V. 281 *et seq.*—Japan, XII. 697—Labrador, XIII. 141—New Zealand, XVI. 238—Polynesia, XVIII. 270, 272, 273, 275, 276 *et seq.*—Paraguay, II. 691, 692—of the Scottish Established Church, XVIII. 494—of the Free Church, 495—of the Moravian brethren, IV. 813—of the Jesuits, XII. 754—illustrations of geography from, X. 468—to Asia, in the middle ages, 469—capacity of the indigenous American tribes for receiving Christianity considered, II. 692. See the geographical articles.
 MISSISSIPPI, state, XV. 277; XXI. 419—debt of, 428—wine of, 888—repudiation of debt by, 441.
 —river, XV. 278; XVII. 604, 647; XIX. 182—source of, XV. 250—its navigation, II. 675; XVI. 62—its deposits, XV. 141—bars in, 80—delta of, XVII. 586; XIX. 207—physical characteristics of, XVI. 84—basin of, XXI. 420.
 —scheme, XIII. 293.
 Missolonghi, Lord Byron's death at, VI. 40.
 MISSOURI, state, XV. 280; XXI. 419—debt of, 428—compromise, 440—wine of, 888.
 —river, XV. 281; XVII. 604, 647.
 Mist, XIV. 657—river mists, *ib.* See Fog.
 Misterton Carr, trigonometrical base on, XXI. 331, 334.
 Mistral, wind, V. 241; XIV. 470; XXI. 523.
 Mistress of the Robes, XI. 776.
 Misy, mineral, XV. 97.
 MITAU, town in Russia, XV. 282.
 Mitcham, in Surrey, perfumes manufactured at, XVII. 408, 409—its flower-farms, XX. 836.
 Mitchell (Dr), on the complexion of the Spanish Americans, VII. 224—on the health of factory operatives, XIV. 253.
 —(Dr), on the manufacture of sugar, XX. 793.

MIT—MOD

- Mitchell (James), a blind and deaf boy, VII. 688; XVII. 677.
 —(James), his attempt to assassinate Archbishop Sharp, V. 429; XX. 93—his execution, V. 430.
 —(Mr), his analysis of claystone and blackband iron ore, XII. 540.
 —(Mr), his screw piles, XX. 723.
 —(Rev. Mr), his experiment on the density of the earth, I. 834.
 —(Sir THOMAS LIVINGSTONE), XV. 282—his explorations in Australia, IV. 256, 257.
 —(THOMAS), philologist, XV. 282.
 Mitchell's patent ropes, XIX. 409.
 Mitchelstown, in Cork, XV. 282.
 —caves, in Tipperary, XXI. 286.
 Mites, III. 387—generation of, 175—their tenacity of life, 176—cheese-mite, 388.
 MITFORD (Mary Russell), XV. 282.
 —(WILLIAM), XV. 282—his History of Greece, VII. 137.
 Mithras, Persian deity, mysteries of, XV. 753.
 MITHRIDATES, XV. 283; III. 615; VI. 222; XVII. 310; XVIII. 292; XIX. 322, 323—orthography of the name, VIII. 471, *n.*
 Mitla, antiquities of, XIV. 725.
 Mitlan, ruins at, XIV. 719.
 Mitra, genus of mollusks, XV. 385—fossil, XVII. 110.
 Mitre, in architecture, III. 510.
 Mitre-shell, XV. 385.
 Mitres, in heraldry, XI. 336.
 MITROWICZ, Austrian town, XV. 285.
 Mitscherlich (Prof.), on optics, XVI. 545, 658, 681, 682.
 MITWEIDA, town in Saxony, XV. 285.
 MITYLENE, XV. 285; XIII. 342—war with Attica, IV. 194—razed by the Thebans, 204. See Lesbos.
 Miyanganj, town in Oude, XVII. 18.
 Mizraim, VIII. 45, 419.
 M'Nab (Mr), on the culture of heaths, XI. 757.
 M'Naught (William), his compound beam-engine, XX. 607.
 Mnemeidæ, zoophytes, XXI. 1001.
 MNEMONICS, XV. 285.
 MNEMOSYNE, XV. 287.
 Mneuis, Egyptian deity, XI. 385.
 Moa, gigantic New Zealand bird, XVI. 233.
 —ISLE, XV. 288.
 MOABITES, XV. 288.
 MOAT, XV. 288.
 Moating, process in woollen manufacture, XXI. 921.
 Moawiyah, III. 363.
 MOBILE, town in United States, XV. 288.
 —river, II. 436.
 MOBILIER, CRÉDIT, XV. 289.
 Moccasin, XX. 208.
 MOCHA, Arabian seaport, XV. 293; III. 355; XVIII. 818—its coffee, III. 345—weights and measures of, XXI. 812.
 —stones, II. 231.
 Mocking-bird, XVI. 752; XVII. 633—rattle-snake attacked by, XIX. 69.
 Modalism, in theology, XXI. 194.
 Modality, in logic, XIII. 589.
 Mode. See Mood.
 —in music, XV. 706.
 MODEL, XV. 293—in cannon-casting, VI. 181, 184—modelling of statues, XIX. 844.
 Modeller, V. 754.
 MODENA, Duchy of, XV. 294—weights and measures of, XXI. 812.
 —city of, XV. 296—academy of arts at, II. 68—university of, XXI. 492—school of painting, XVII. 72.
 MODERN, Hungarian town, XV. 297.
 —history, and historians, XI. 542, 543, 548.
 Modestus, VII. 307.
 Modesty, deficient in the blind, IV. 778.
 MODICA, town in Sicily, XV. 297.
 Modillion, III. 510.
 Modiola, genus of mollusks, XV. 348—fossil, XVII. 106.
 MODULATION, in music, XV. 297, 730.
 Module, III. 510.
 Modulus of elasticity, I. 874; II. 101; VI. 251.

MOD—MOI

Modulus of a machine, XIV. 404.
 Modum, in Norway, XV. 297.
 Modumite, mineral, XV. 116.
 Moëtae, VI. 74.
 Moehsen (Dr), on mortality, XV. 603.
 Moëx, island, XV. 297.
 Moëris, XV. 297—Egyptian lake, VIII. 430, 503.
 Moesia, XV. 297.
 Moffat, XV. 297—mineral wells of, VIII. 238; XV. 37.
 Moffeta, II. 732.
 Mogador, in Morocco, XV. 297, 596.
 Moghilev, or Mohileff, in Russia, XV. 298; XIX. 521.
 Mogi-das-Cruzes, in Brazil, XV. 298.
 Mogoo, in Persia, XV. 298.
 Mogridge (George), XV. 293.
 Mogul empire, III. 745, 746; XI. 475, 478—decay of, 480—taxation under, 510.
 Moguls, XV. 298; XI. 475 *et seq.*; III. 745 *et seq.*
 Mohacs, town in Hungary, XV. 298—battle of, XXI. 369.
 Mohair, XXI. 906.
 Mohammed Alee, XV. 298. See Mehemmet Ali.
 —Bey, VIII. 488.
 Mohammed, prophet, XV. 299—works on his life and character, 300, 301—Prideaux's Life of, XVIII. 512.
 —Abu Abdalla, XX. 463.
 —I, II, III, IV., Turkish emperors, XXI. 368, 369, 370, 372.
 —(Dost), V. 667.
 Mohammedanism, XV. 299; IX. 395—may be regarded as one of the corruptions of Christianity, I. 534, n. 2—advantageous to the Jews, XII. 777—baneful effects of, XVII. 428—predestination a doctrine of, XVIII. 477—era of the Hegira, VI. 673; XI. 284. See Koran, Mohammed, Musselman.
 Mohammedans, their number, XV. 308—rarely converted to Christianity, 274—in India, XI. 463; their connection with the rebellion of 1857, XV. 308; their conquest of India, XI. 478—feasts, IX. 494—geography advanced by, X. 468—coinage, XVI. 391—circumcision practised by, VI. 732—their laws against usury habitually violated, XII. 428—their conquest of Egypt, VIII. 474; of Persia, XVII. 436—in Jerusalem, XII. 747—in Russia, XIX. 529—their rule in Spain, XX. 461 *et seq.*, 466—their prejudice against the dissection of the human body, 815. See Arabians, Saracens.
 Mohammerah, town in Persia, XV. 309.
 Mohawk Indians, II. 680.
 —river, XVI. 213—falls of, 214.
 Moheau (M.), on the population of France, XV. 604.
 Mohilev, XV. 309. See Moghilev.
 Mohill, in Leitrim, XV. 309.
 Mohl (Prof.), on the cells of plants, V. 66 *et seq.*—on vegetable respiration, 105—on the flow of sap in trees, 111—on Knight's theory of propagation from seeds, XI. 702, n.
 Mühler on Mohammed and the Koran, XV. 301, 302, 303.
 Mohr on electrical induction, VIII. 557.
 Mohs, his scale of the hardness of minerals, XV. 55—his arrangement of minerals, 67.
 Mohsite, mineral, XV. 109.
 Mohun (Lord), his duel with the Duke of Hamilton, VIII. 231.
 Moidore, Portuguese coin, XV. 442.
 Moigno (Abbè), on lamellar polarisation, XVI. 676—on conical refraction in France, I. 917, n.
 Moir (David Macbeth), XV. 309—on the Saracenic school of medicine, XX. 816.
 Moira (Earl of), V. 554.
 —(Lady), on the manufacture of flax-cotton, IX. 656.
 Moissac, town in France, XV. 310.
 Moisture, one of the chief elements in our notion of climate, XVII. 610—distribution of, 613—its influence on health, XIX. 608; combined with heat, 609.

MOI—MOM

Moitte (Jean Guillaume), sculptor, XV. 310.
 Moivre (A. de), XV. 310. See Demoivre.
 Mokassin snake, XIX. 68.
 Mokha. See Mocha.
 Mokrin, Hungarian village, XV. 310.
 Mola, or Mola di Bari, town in Naples, XV. 310.
 Molai, or Molay (Jacques de), XV. 310.
 Molanus, V. 60.
 Molar teeth, in man, III. 25; XVI. 407, 409—in brutes, III. 107. See Odontology.
 Molasses, XV. 310; VI. 516; VIII. 50; XX. 792.
 Molbech (Prof.), Danish author, XIX. 696.
 Mold, town in Flintshire, XV. 311.
 Moldau, river, XV. 311; XVIII. 448.
 Moldavia, XV. 311; XXI. 684—invasion by Mohammed, XII. 14—weights and measures of, XXI. 812.
 Molé (M.), X. 202—his ministry, 212.
 Mole, in zoology, XIV. 152; XXI. 546, 547—its scapula, humerus, and carpus, III. 81—peculiarities of its muscles, 92—its fur, X. 351—dentition, XVI. 450—shrew mole, XIV. 151—Cape mole, ib.; XVI. 450—sand mole, XIV. 185.
 —river, XX. 836.
 Mole-cricket, IX. 158.
 Molecular fluids, fibres, membrane, movements, XVII. 649—theory of organisation, ib.
 Molecules, active or animated, III. 205—forms of, in crystallisation, VII. 560—molecule tissues, XVII. 649.
 Molesworth (Sir William), XV. 313.
 Molfetta, town in Naples, XV. 314.
 Molière (J. B. Poquelin), XV. 314—his comedies, VIII. 156.
 Molina (Louis), XV. 318.
 Molineux (Samuel), on the aberration of light, II. 37.
 Molinos (Michael de), XV. 318, 757.
 Molise, province of Naples, XV. 318; XX. 255.
 Moliterno, town of Naples, XV. 318.
 Moll, town of Belgium, XV. 318.
 —(Prof.), his electro-magnet, XIV. 75—on the invention of the telescope, XVI. 527.
 Molliesia, genus of fishes, XII. 252.
 Mollusca, XV. 319; II. 772; IX. 60—their organs of smell, III. 94—eyes, 96—nervous system, 105—structure, 185—Lamarck's improved classification of, 183—characteristics and classes of, 185, 191, 192—Cuvier's arrangement of, ib.—hermaphrodite, 171—kinds used as food, IX. 765—their arrangement in zones at various depths, 773—order of their appearance in the strata of the earth, XVII. 92—fossil, 103, 640—fossil genera of, 115—number known, 631—of Madeira, XIII. 800—distribution of marine, XVII. 636.
 Moloche, or Molech, XV. 404.
 Molokai, island, XVIII. 270.
 Molossi of Epirus, IX. 277.
 Molossus, genus of mammalia, XIV. 148.
 Molten-grease, disease in cattle, XXI. 568.
 Molton (South), in Devon, XV. 404.
 Mollucas islands, XV. 404—language, XIII. 218—serpents, XIX. 73.
 Moluris, genus of insects, IX. 130.
 Molybdena-ochre, XV. 112.
 Molybdenite, XV. 118.
 Molybdenum, VI. 494; XV. 66.
 Molybdic acid, VI. 494.
 Molyneux (Peter), painter, XV. 405.
 Molyneux (Lieut.), on the Jordan, XVII. 186, 187.
 —(William), mathematician, XV. 405—question regarding vision proposed to Locke by, XIV. 574, n. 2.
 Mombas, African seaport, XV. 405.
 Momigny on Hadyn's imitative music, XV. 737.
 Mommsen on the transition from a pastoral to an agricultural life, XVII. 538.
 Momotombo, volcano in Nicaragua, XVI. 242, 244.
 Momparrwa, in Borneo, V. 47.

MOM—MON

Mompo, town in New Granada, XV. 405.
 Momus, XV. 406.
 Mona, VIII. 183. See Anglesea.
 Monacanthus, genus of fishes, XII. 313.
 Monachism, XV. 406.
 Monaco, in Italy, XV. 409.
 Monads, Leibnitz on, I. 131, 255; VIII. 327.
 Monaghan, Irish county, XV. 409—agricultural statistics, XII. 516, 517.
 Monarchs, table of English, VIII. 714.
 Monarchy, XV. 411; X. 733—Aristotle on, III. 568.
 Monas, genus of animalcules, III. 199.
 Monasa, genus of birds, XVI. 778.
 Monastier, in Tunis, XV. 415.
 Monasteries, II. 14—St Dunstan's exertions in favour of, VIII. 262—many erected by king Edgar, 660—suppression of, in England, 702—bells used in, IV. 628—transcription of MSS. in, XIII. 386—chronicles written in, VII. 535—in Jerusalem, XII. 747—in France, X. 268.
 Monasticism, in Egypt, VIII. 473—of the Buddhists, X. 722—a violation of religious unity, I. 508, 509.
 Monastir, town in Turkey, XV. 415.
 Monaul, bird, XVI. 783.
 Monazite, mineral, XV. 101.
 Monazitoid, mineral, XV. 101.
 Monbodo (Lord). See Burnet (James).
 Moncey (B. A. Jeannot), XV. 415.
 München-Gladbach, in Rhenish Prussia, X. 640.
 Moncolieri, town in Italy, XV. 415.
 Moncreiff, (Sir H. Wellwood), Scottish divine, XV. 415—on the Secession, XVIII. 499.
 —(James Wellwood, Lord), XV. 416.
 —hill, in Perthshire, XVII. 457.
 Monday, VI. 75; I. 458, n. 2.
 Mondego, river, XVIII. 393.
 Mondino, or Mondini, anatomist, II. 755; XIV. 458.
 Mondoneto, town in Spain, XV. 416.
 Mondovi, Sardinian town, XV. 416.
 Mone (F. Joseph), early liturgies published by, XVIII. 210.
 —(Dr Fridegar), palimpsest of Pliny discovered by, XVII. 214.
 Monedula, genus of insects, IX. 195.
 Moneta, name of Juno, XIII. 20.
 Monetarium, hearth-tax, XV. 435.
 Monela oil, XVI. 496.
 Money, XV. 416—ancient British, VII. 69—Japanese, XII. 696—modern Egyptian, VIII. 517—Greek, XI. 15; XVI. 358, 359—French, X. 284—Norwegian, XVI. 328—Phoenician, 358, 359—Ionian islands, XII. 446—Aristotle on, III. 569—a country no richer by keeping, VII. 146—notion that money constitutes wealth, 192—money-table, III. 584—substitution of gold for silver, as money, XVIII. 473, 474—invested in railways, 785. See Coin, Currency, Paper-money, Precious Metals, Interest.
 —Order Office, XVIII. 413—amount of money-orders issued, ib.—conditions to be observed, 418—money-orders issued in Scotland, 414; in Ireland, ib.
 Money-cowry, XV. 384.
 Moneyers, VI. 73, 74.
 Monflanquin, town in France, XV. 494.
 Monge (Gasper), XV. 494; I. 701, n. 3—on capillary attraction, XII. 94, 95, 97—on drops, 102—his Descriptive Geometry, 805—on mechanics, XIV. 384, 391.
 Monghir, in Hindustan, XV. 405.
 Mongolia, in Asia, XV. 495; III. 731—Felix, 732.
 Mongolian variety of man, II. 775; XI. 541; IX. 344—its branches, II. 776—language, IX. 389—Mongolian skull, III. 29.
 Mongols, XIII. 217; XV. 495. See Mongolian.
 Mongrel dogs, XX. 219.
 Monimaceæ, nat. order of plants, V. 204.
 Monitor, genus of reptiles, XIX. 27.
 Monitorial system of teaching, XV. 827.
 Monk (George), Duke of Albemarle, XV. 496—his proceedings in reference to

MON—MON

the restoration of Charles II., V. 419; XIII. 168; created duke by, II. 420—his recommendation of Lord Stair to Cromwell, VII. 628.
 Monk-fish, XII. 313.
 Monkey-pot order of plants, V. 192.
 —plant, V. 136.
 Monkeys, XIV. 139, 140—voice of, III. 101—their geographical distribution, XVII. 631.
 Monkland bridge, XII. 605.
 —canal, XIII. 176; XIX. 808.
 Monks, XV. 497—their services to learning, X. 507; VII. 535; XIII. 386—their hymns, XVIII. 108.
 Monkshead, plant, V. 123, 180; II. 96. See Aconitum.
 Monkwearmouth, in Durham, VIII. 267—bridge at, XX. 807.
 Monmouth (James, Duke of), XV. 497; V. 427—defeats the Covenanters at Bothwell bridge, 430—aspires to the Crown, 433—executed, 435.
 —English town, XV. 497.
 Monmouthshire, XV. 497—population and value of property, VIII. 754—great oak, in, XXI. 270.
 Monnier (M. Le), on electricity, VIII. 578.
 Monocentris, genus of fishes, XII. 210, 283.
 Monochir, genus of fishes, XII. 272.
 Monochlamydeæ, sub-class of plants, V. 203.
 Monochord, XV. 500.
 Monochromatic illumination of microscopic objects, XIV. 798.
 Monoclinohedric system of crystallisation, XV. 48—twin crystals in, 53.
 Monocotyledonous plants, V. 76, 141, 179—stem of, 83—germination, 166—number known, 224—fossil species, 233—number described, XVII. 626.
 Monoculus, genus of crustacea, VII. 543.
 Monodon, genus of mammalia, dentition of, XVI. 443, 444.
 Monocœous plants, V. 126.
 Monogram, XV. 500—of early printers, IV. 708.
 Mono-ideism, XVII. 680.
 Monoistic hypothesis on the origin of evil, IX. 421.
 Monomachus, VII. 315.
 Monomania, XV. 500; XIV. 529, 530, 426.
 Monomise, in Southern Central Africa, XV. 500.
 Monomotapa, in Africa, XV. 500.
 Monomyaria, genus of mollusks, XV. 344.
 Monophysites, heretics, XV. 500; IX. 406.
 Monopleura, genus of mollusks, XV. 349.
 Monopoli, town in Southern Italy, XV. 501.
 Monopolies, in the reign of Elizabeth, V. 382—evils of, VII. 195—of trade with colonies, 141—their influence on prices, XVIII. 242—their abolition necessary for the prosperity of commerce, XIV. 274—of the Dutch Chamber of Commerce, II. 600, n.—of the London theatres, VII. 168—in the woollen trade, XXI. 915.
 Monopteros, in architecture, III. 510.
 Monopterus, genus of fishes, XII. 231.
 Monostoma, genus of entozoa, XXI. 979.
 Monostomatidæ, zoophytes, XXI. 1001.
 Monosyllabic language, XIII. 198, 199—people using, IX. 344.
 Monotholites, heretics, XV. 501.
 Monotis, fossil mollusks, XVII. 106.
 Monotomo, genus of insects, IX. 142.
 Monotrema, tribe of mammalia, XIV. 19.
 Monotriglyph, III. 511.
 Monotropaceæ, nat. order of plants, V. 198.
 Monradite, mineral, XV. 80.
 Monro (Dr Alexr.), primus, XV. 502; XX. 819—his Elements of Anatomy, II. 767; III. 73—first clinical lecturer in Edinburgh, XIV. 462; XX. 819, n. 4.
 —(Dr Alexr.), secundus, on the lymphatics, II. 766—on the amount of fluids within the cranium, XVII. 698.
 —(Dr), on echinoderms, XXI. 988.
 Monroe (James), president of United

MON—MON

- States, XV. 502—his political doctrine, XXI. 440.
- MONROVIA, town in Africa, XV. 502.
- MONS, town in Belgium, XV. 502.
- MONSELICE, town in Austrian Italy, XV. 503.
- MONSOON, XV. 503; III. 737—in Afghanistan, II. 202—Africa, 216—Ceylon, VI. 392—India, XI. 451—Sumatra, XXI. 803.
- MONSTER, XV. 503; XIV. 423.
- MONSTRELET (Enguerrand de), XV. 504.
- MONT BLANC, XV. 509; II. 624—ascents of, 627, 628—height, XVII. 642.
- Cenis, XIX. 633—road over, 288.
- DE PIÉTÉ, XV. 504.
- Montacuta, genus of mollusks, XV. 350.
- MONTAGNANA, town in Austrian Italy, XV. 504.
- MONTAGU (Basil), Queen's counsel, XV. 504.
- (LADY MARY WORTLEY), XV. 505.
- style of her letters, XVIII. 327, 328.
- (EDWARD WORTLEY), XV. 505.
- his Ornithological Dictionary, XVI. 733, 815.
- on the annelides, XI. 294 *et seq.*
- Montagne (Charles), XVI. 207.
- MONTAIGNE (Michel, Seigneur de), XV. 506.
- his merits as a writer on the philosophy of mind, I. 49—had little scientific knowledge, 50—predisposed to scepticism, ib.; XIX. 709—his education not neglected, I. 50, *n.*—character of his scepticism, 51—radical fault of his understanding, ib.—his Apology for Raymond de Sebonde, ib.—died a Roman Catholic, ib. and *n.* 1—his opinion of Sebonde's Theologia Naturalis, 52—poetical description of, by Voltaire, 53, *n.* 1—reason why his name should be united with that of Rochefoucauld, 55—effects of his Maxims on the higher orders, 56.
- MONTALEGRE, town in Brazil, XV. 507.
- MONTALEMBERT (Marc-René, Marquis de), engineer, XV. 507—on fortification, IX. 816, 835.
- Montalivet (M.), X. 212.
- MONTALVAN (Juan Perez de), dramatist, XV. 507.
- MONTANARA, town in Piedmont, XV. 508.
- MONTANCHES, town in Spain, XV. 508.
- MONTANUS, founder of the Montanists, XV. 508.
- MONTARGIS, town in France, XV. 508.
- MONTAUBAN, town in France, XV. 508—population, X. 277.
- Montbar, buccaneer, V. 710.
- MONTBELLARD, town in France, XV. 509; VIII. 114.
- MONTBLANCH, town in Spain, XV. 509.
- MONTBRISON, town in France, XV. 509.
- MONT-DE-MARSAN, town in France, XV. 509.
- Monteagle (Lord), on the loan for the Russian war, X. 342—his protest against the repeal of the newspaper stamp duty, XVI. 191.
- Monte Bolca. See Bolca, Monte.
- CHIARO, town in Lombardy, XV. 509.
- ROSA, XV. 512; II. 624, 627—height of, XVII. 642.
- SAN GIULIANO, in Sicily, XV. 512.
- MONTUCULI (Raimondo, Count de), XV. 510.
- (SEBASTIANO DI), XV. 510.
- MONTFASCON, town of Italy, XV. 510.
- MONTFORT, town of Naples, XV. 510.
- MONTIGO, town in Jamaica, XV. 510.
- Bay, XII. 677.
- Montegre (M.), on the earth-worm, XI. 301.
- chimerical figure in heraldry, XI. 335.
- (M. de), his works on animal magnetism, XX. 424, 425.
- Monteith (Col.), on the Caspian Sea, VI. 311.
- MONTLEONE, town of Naples, XV. 510.
- MONTMART, town of France, XV. 511.
- Montemayor, poetry of, XVIII. 114.
- MONTEN (Dietrich), XV. 511.

MON—MON

- MONTENEGRO, Turkish state, XV. 511.
- Montepetit (M.), on iron bridges, XII. 577.
- MONTERRAU, in France, XV. 512—battle of, X. 167.
- MONTREY, town in Mexico, XV. 512; XIV. 728—taken by the forces of the United States, 714.
- MONTESQUIEU (Charles de S. Baron de), XV. 512—main object of his work on the Spirit of Laws, I. 94—first connected jurisprudence with history and philosophy, ib.—examples of his peculiar style of thinking, ib., *n.* 2—his speculations directed to the practical conclusion pointed out by Bacon, 95—his Spirit of Laws gave the first blow to the study of natural jurisprudence, ib.—on natural religion, 277—on a historical work by the Abbé Dubois, VIII. 227—on usury among the Romans, XII. 428—on the law of nations, XIII. 280—on a standard of value, XV. 419.
- MONTVERDE (Claudio), musician, XV. 515.
- (General), IV. 817.
- MONT-VIDEO, XV. 515; V. 602—weights and measures of, XXI. 812.
- Montezinho, Serra de, XVIII. 393.
- Montezuma, Mexican kings, VII. 418, 419; XIV. 701, 702.
- MONTFAUCON (Bernard de), XV. 516—on Roman aqueducts, III. 339—on paper, XVII. 248, 249.
- Montfort, in France, XII. 361.
- (SIMON DE), XV. 516; VIII. 679.
- Montgallard (M.), on the character of Moreau, X. 132, *n.* 2—on the escape of the Emperor Alexander at Austerlitz, 140, *n.* 1.
- Montgery (M. de), on artillery, III. 698 *et seq.*
- Montgolfier, balloon invented by, II. 173 *et seq.*—his ascent in one at Lyons, 176.
- Montgolfier's hydraulic ram, XII. 75, 173; V. 246.
- MONTGOMERY (Alex.), poet, XV. 516.
- (Sir George), his experiment in irrigation, XII. 619.
- (JAMES), poet, XV. 516—his hymns, XII. 189.
- (Rev. ROBERT), XV. 517.
- town in United States, XV. 518.
- town in Wales, XV. 517.
- MONTGOMERYSHIRE, in Wales, XV. 518—population and value of property, VIII. 754—lead mines of, XV. 245.
- Month, VI. 75—Jewish, 670—Egyptian, ib.; VIII. 450—Syrian and Macedonian, VI. 671—Ethiopian or Abyssinian, 673—Armenian, ib.—Mahomedan, 674—Persian, 675—Chinese, ib.—Indian, 676—Greek, 76—Roman, ib.—Druidical, VIII. 186—different kinds of lunar, IV. 38—names of Attic months, VI. 666—Dupuis' theory on the origin of the Greek months, VIII. 263.
- MONTI (Vincenzo), poet, XV. 518.
- Monticellite, mineral, XV. 89.
- MONTIVILLIERS, town in France, XV. 519.
- Montivaltia, fossil corals, XVII. 97.
- MONTLUCON, town in France, XV. 519.
- Montmartre, XVII. 280—gypsum of, XV. 148—fossil animals found in the quarries of, XVII. 639.
- Montmirail, battle of, X. 167.
- Montmorenci (Philip de), Count Horn, XI. 563 *et seq.*
- MONTMORENCY (Anne de), constable of France, XV. 519.
- (HENRI II., Duc de), XV. 520—order of knights connected with the house of, XIII. 121.
- MONTMORILLON, town in France, XV. 520.
- Montmort (Remond de), on chances, XVIII. 589, 603.
- MONTOR, town in France, XV. 520.
- MONTORO, town in Spain, XV. 520.
- MONTPELLIER, town in United States, XV. 520.
- MONTPELLIER, town in France, XV. 520; XI. 342—swarm of ants at, III. 265—perfumery of, X. 256—population, 277—university of, XXI. 448.

MON—MOO

- Montpensier (Duc de), X. 222; XX. 482.
- Montravel (M. Tardy de), on magnetic somnambulism, XX. 424.
- MONTREAL, XV. 521; VI. 133—climate, 139, 140—population, 144—tubular bridge at, 155—disturbances at, in 1837, 159.
- MONTROSE, XV. 524.
- (Marquis of), his victories in Scotland, V. 405—defeated at Philiphaugh, 407—executed, 413.
- Monts de Piété, in Paris, XVII. 283; Belgium, IV. 624. See Pawn-Office.
- MONTSERRAT, West Indian island, XV. 525.
- MONTUCLA (Jean-Etienne), mathematician, XV. 525—on Descartes and Harriot, II. 486—on the arithmetic of sines, 547—on the claims of Newton and Leibnitz to the discovery of fluxions, IX. 673.
- Monument of London, XIII. 675.
- Mood, in grammar, X. 766, 768 *et seq.*
- MOODKEE, in Hindustan, XV. 525.
- Moods of the syllogism, XIII. 613, 615, *n.* 623.
- MOOLTAN, or Moulton, province of Hindustan, XV. 525.
- city, XV. 525—capture of, by the British in 1849, V. 671—silks of, XI. 458.
- MOON, XV. 526; IV. 31, 88—gravitation and revolution of, I. 676—Newton's theory of, a work of genius almost superhuman, 779—acceleration of, 814, II. 74; IV. 37; III. 812; XIII. 233—Hipparchus' discovery of the period of her revolution, III. 791—Ptolemy's discovery of her evection, 792—Mayer's lunar tables, I. 781; III. 811; XIV. 369—her oval and large appearance in the horizon, IV. 10—phases, 32—parallax, 33—magnitude, ib.—orbit, I. 833; IV. 33, 35, 38, 88—harvest moon, 34—equation of the centre, 36—evection, ib.—variation, ib.—annual equation, ib.—horizontal moon, IV. 10—inequalities of her motion, 37; IX. 373—rotation of, IV. 39—libration of (see Libration)—nature of her substance, 41—spots, 42—atmosphere, 43—eclipses and occultations, 45—extent of her shadow and penumbra, 48—tables for calculation of new and full moon, 120—application of the tables, 134—lunar months, 38—year, VI. 79—cycle, 81—Chinese festival at full moon, 570—tables of the moon's latitude in eclipses, IV. 129, 130—augmentation of, XVI. 39—meridian passage, ib.—Leslie on her light, IV. 41; discovery of heat in, XIV. 485—passages of the moon over the meridian, 689; by lunar distances, ib.—influence of, on the magnetic needle, 14; XVII. 618—fancied coldness of her rays, VII. 101, 766—how to take the altitude of, XVII. 32—regard paid by the Druids to her revolutions, VIII. 186—theory of the lunar origin of meteorolites, XIV. 613—luminous circles surrounding, see Corona, Halo, Chromatics—lunar theory, I. 814 *et seq.*, 825 *et seq.*, 849—moon's influence on the tides, XXI. 249; XVII. 580.
- Moon's system for the blind, IV. 782; XVIII. 554.
- Moonseed order of plants, V. 181.
- Moonstone, XV. 70.
- MOOR, town in Lower Hungary, XV. 526.
- (JAMES), XV. 526.
- Moorecroft's journey to the Himalaya mountains, XI. 447—on certain Indian animals, 455.
- MOORE (Edward), dramatist, XV. 526.
- (Dr JOHN), XV. 527.
- (Sir JOHN), XV. 527—his expedition to Sweden, V. 603—his Spanish expedition, 604—retreat to Corunna and death, ib.; VII. 421; XXI. 706, 821.
- (THOMAS), poet, XV. 530—his duel with Jeffrey, XII. 717—his poetry, XVIII. 126—his Epicurean, XIX. 282—on Sheridan, XX. 108, 109.

MOO—MOR

- Moore or More (Roger), rebellion of, V. 398; XII. 481.
- (Sir Jonas), IX. 653.
- (F.), on Asiatic silk-producing moths, XX. 289, *n.*
- Mooring anchors, III. 118.
- MOORS, XV. 533—of Africa, II. 220, 226; XV. 595—Algiers, II. 566, 569—their academies in Spain, 61—architecture, III. 449—ballads, XVIII. 113—pottery, 431. See Arabians, Moriscos, Saracens.
- MOORSHEDABAD, in Hindustan, XV. 534; IV. 651.
- Moorsom (G.), on tonnage, XXI. 304, 307.
- Moorsom's (Capt.), percussion fuze, XI. 142.
- MOOSH, in Asiatic Turkey, XV. 534.
- Moplays of Canara, VI. 162.
- Moquette carpets, VI. 272.
- Moquin-Tandon on leeches, XI. 303 *et seq.*
- MORA, town in Spain, XV. 534.
- Morabin (M.), on Bellenden's work on the affairs of Rome, IV. 637.
- MORADABAD, in Hindustan, XV. 534.
- Moraines of glaciers, II. 625; X. 635, 636; XV. 139; XVII. 603—among the Himalayas, XI. 443.
- Moral education, XV. 811.
- faculty, XIV. 580—necessity of moral judgments, 599—moral treatment of mental diseases, 537—moral sense, XV. 544—moral obligation, 563; XIV. 620.
- law, XIII. 253—Kant on, 48.
- perfections of God, XXI. 191.
- Philosopher, difficulties of, I. 310.
- PHILOSOPHY, XV. 535—little advance made in, prior to the seventeenth century, I. 20—the Economists on rights and duties, VIII. 376—Paley on, XVII. 200—Plato's system of, 807—opinions of Socrates on, XX. 398, 401. See Ethical Philosophy, Ethics.
- proof of the existence of God, XXI. 187.
- MORAL-DE-CALATRAVA, town in Spain, XV. 534.
- MORALES (Ambrosio), XV. 575.
- (General), IV. 818.
- (LUIS), painter, XV. 575.
- Moralities, religious plays, VIII. 144.
- Morality, Christian, VI. 673—the real in, XIV. 622—reciprocal influence of morality and law, XIII. 259—standard of, XIV. 621 and *n.* 1—poetry conducive to, XVIII. 91—under the law, I. 482; under the gospel, 483—as taught by Socrates, XX. 396, 397.
- Morals, medical, XIV. 464.
- MORANO, town of Naples, XV. 575.
- MORAT, Swiss town and lake, XV. 575.
- MORATIN (L. Fernandez), Spanish dramatist, XV. 575.
- (N. FERNANDEZ), Spanish poet, XV. 575.
- MORAVA, river, XV. 576.
- MORAVIA, province of Austria, XV. 576, IV. 310, 309.
- MORAVIANS, XV. 576; IV. 812—origin of, XXI. 971—constitution of their churches, XVIII. 486—missions to Labrador, XIII. 141—in Scotland, XIX. 801.
- MORAY, or Elginshire, XV. 576—Firth, XIX. 794—floods in 1829, XVII. 600—agricultural statistics, XIX. 796, 797, 798—population, 799.
- Morbid growths, in physiology, XVII. 690—theory of, 694—origin and development of, ib.—propagation of, 695—decline of, 696.
- MORBIHAN, department of France, XV. 577.
- MORCELLI (S. Antonio), antiquary, XV. 578.
- MORCONE, town of Naples, XV. 578.
- Mordan (Messrs), their locks, XIII. 535.
- Mordants in dyeing, VIII. 278—in calico-printing, 315.
- MORDAUNT (Charles), Earl of Peterborough, XV. 578; XX. 59.
- Mordecai (Captain), on gunnery, XI. 105, 106, 144.

MOR—MOR

MORDEE BAY, XV. 579.
 Mordella, genus of insects, IX. 134.
 Mordellones, family of insects, IX. 133.
 MORE (HANNAH), XV. 579.
 — (HENRY), XV. 580—accuses Des-
 cartes of nullibism, I. 246.
 — (J. S.), his edition of Stair's Insti-
 tutions, VII. 630.
 — (Roger). See Moore (Roger).
 — (Sir ANTHONY), portrait-painter, XV.
 579, 593.
 — (Sir THOMAS), XV. 582—character
 of, I. 232—anecdote of, IV. 528—his
 execution, VIII. 700—his patronage of
 Holbein, XI. 559.
 MOREA, XV. 584; XI. 12—silk produced
 in, XX. 278.
 MOREAU (Jean Victor), XV. 584; X. 101
et seq., 129, 131—his campaign of 1796,
 V. 563.
 MORECAMBE BAY, XV. 585.
 Morel, edible fungus, V. 217.
 — (M.), his definition of insanity,
 XIV. 526.
 Morelia, Mexican town, XIV. 724.
 MORELL (André), antiquary, XV. 586.
 — (Mr), on human intelligence as
 distinct from that of brutes, XIV. 559,
n. 2—on vision, 574.
 — (THOMAS), XV. 586.
 MORELLA, town in Spain, XV. 586.
 MORELLI (Giacomo), librarian in Venice,
 XV. 586.
 Morelos (Jose Maria), his exploits, XIV.
 709—execution, 710.
 Morena (Sierra), XX. 487.
 Meri (Louis), XV. 586.
 Moreschi on erectile tissue, II. 800.
 MORESQUE, XV. 586; III. 340.
 MORETO-Y-CABANA (Augustin), Spanish
 dramatist, XV. 586.
 MORETON BAY, XV. 587—penal settlement
 at, XVIII. 578.
 MORETON-HAMSTEAD, in Devon, XV. 587.
 MORETON-IN-DE-MARSH, XV. 587.
 MORGAGNI (G. Battista), XV. 587—his
 anatomical labours, II. 764—on the
 structure of the arteries, 791.
 Morgan, a buccaneer, V. 711.
 — (Sir Charles), on the consumption
 of fish, IX. 630—his work on fisheries,
 618, *n.* 1.
 — (Mr), on annuities and life assu-
 rance, III. 222, 223; XII. 399, 401—
 his account of the Equitable Society,
 III. 224, 231—some of his tables criti-
 cised, 224—on mortality, XV. 614.
 — (Mr), on the effects of electricity
 on animals, VIII. 602.
 — (Mr), on Shakspeare's disregard
 of the unities, VIII. 153.
 — (Mr de), on logic, XIII. 578, 580, *n.*,
 602, *n.*—on probability, XVIII. 591.
 MORGARTEN, in Switzerland, XV. 587—
 battle of, XX. 884.
 MORGHEN (R. Sanzio), engraver, XV. 587
 —reference to, VIII. 806.
 MORHOF (Daniel George), XV. 588.
 Moriah, Mount, XII. 731, 736, 745.
 Morichini (Dr), on the magnetism of the
 solar rays, XIII. 452; XVI. 595.
 MORIER (James), XV. 588—his account of
 Persia, XVII. 421 *et seq.*
 Morillo, IV. 818.
 Morin (M.), on breast-wheels, XII. 165—
 experiments on friction, XIV. 405.
 — colouring matter, VIII. 295.
 Moringaceæ, nat. order of plants, V. 190.
 Moringua, genus of fishes, XII. 232.
 Moriscos, in Spain, their revolt, XX. 469
 —expulsion, 470.
 Mörk, Swedish romance writer, XIX. 701.
 Morla (Tomas de), on the velocity of
 cannon balls, XI. 133, *n.*
 MORLAIX, town of France, XV. 588.
 MORLAND (George), painter, XV. 588.
 — (Sir SAMUEL), XV. 588—his baro-
 meter, IV. 454—on the speaking-trumpet,
 XXI. 360.
 — (Samuel), on the pollen of plants,
 V. 152.
 Morlet on the magnetic equator, XIV. 57.
 Mormolyce, genus of insects, IX. 91.

MOR—MOR

MORMONISM, XV. 589—residence of the
 Mormons in Utah, XXI. 498—places of
 worship in Scotland, XIX. 801.
 Mormyridæ, family of fishes, XII. 251, 252.
 Mormyrops, genus of fishes, XII. 252.
 Morinyrus, genus of fishes, XII. 252.
 MORNAY (Philippe de), XV. 593.
 Morne (Lough), VI. 273.
 Mornington (Lord), XXI. 815. See Wel-
 lesley (Marquis of).
 Moro (Attoni), XV. 593, 579.
 MOROCCO, XV. 593; II. 223—monarchy,
 XV. 413—heights of mountains, XVII.
 644—leather, XIII. 310—Spanish war
 with, XX. 484—weights and measures,
 XXI. 812.
 — city, XV. 596.
 MORON, town in Spain, XV. 597.
 MOROSINI (Francesco), doge of Venice,
 XV. 597.
 Moroxite, mineral, XV. 94.
 MORPETH, XV. 598.
 MORPHEUS, XV. 598.
 Morphia, muriate of, V. 182; XVI. 518—
 its poisonous properties, XIV. 436—
 effect of, weakened by habit, XVI. 128.
 Morphine, XVI. 518.
 Morphnus, genus of birds, XVI. 743.
 Morpho, genus of insects, IX. 208.
 Morphology of flowers, V. 117.
 Morra, timber-tree, XX. 172; XXI. 277.
 Morren (Mr), on the pollen of flowers, V.
 154.
 Morrhuæ, genus of fishes, XII. 268, 269,
 270.
 MORRIS (Corbyn), on mortality in London,
 XV. 601.
 — (F. O.), his work on insects, IX. 23.
 — canal, United States, XVI. 56.
 — DANCE, XV. 598.
 MORRISON (Robert, D.D.), XV. 599—on the
 Chinese language, VI. 571, 574—on the
 population of China, 587.
 MORS, island, XV. 599.
 Morse, XIV. 173—ivory of, III. 105.
 — key in electrical telegraphs, XXI.
 99.
 — (Mr), his electric telegraph, I. 986;
 XXI. 101, 106.
 MORSHANSK, town in Russia, XV. 599.
 MORTAGNE, town in France, XV. 599.
 Mortal sins, XXI. 201.
 MORTALITY (human), XV. 600—law of,
 631—rate of, in England, VIII. 755—in
 the navy, XVI. 106—in Glasgow, X.
 656—not increased by manufactures,
 XVIII. 238—diminution of the rate of,
 III. 229—greater in males than in
 females, 230—in foundling hospitals,
 IX. 845; XIV. 444—variations of, in
 different countries, XVIII. 351—in the
 United States, 340; XXI. 421, 422;
 Prussia, XVIII. 664; Scotland, XIX.
 800; Sheffield, XX. 98—annual per cent.
 in London and England, XIII. 660—
 registration of deaths, XVIII. 831. See
 Annuities, Population, Probability.
 MORTAR and Pestle, XV. 651.
 — kind of cannon, XV. 651; XI. 141,
 133—arrangement of, in sieges, III. 693
 —table of ranges for, XI. 147—for
 throwing a line over wrecked vessels,
 XIII. 442.
 — in brick and stone building, V. 732,
 733, 738; XX. 713—its transverse
 strength and power of resistance, 717,
 718—connection formed by mortar of
 lime or gypsum, VI. 381.
 MORTARA, town in Italy, XV. 651.
 MORTIER (E. A. C. Joseph), marshal of
 France, XV. 651; X. 166 *et seq.*, 211.
 Mortification, XVII. 690.
 MORTIMER (John Hamilton), XV. 651.
 — on husbandry, II. 259.
 — (Earl of), VIII. 682.
 Mortise and Tenon, VI. 264; XII. 810—
 mortising, V. 747.
 Mortlach, battle of, XIX. 745.
 Mortlake, in Surrey, its tapestry, XXI. 20.
 MORTMAIN, in law, XV. 651.
 MORTON (Cardinal John), XV. 653.
 — (Earl of), regent of Scotland, XIX.
 741.

MOR—MOT

Morton (Mr), on storing mangel-wurzel,
 II. 320.
 — (THOMAS), dramatist, XV. 653.
 — (Dr S. G.), on the aborigines of
 America, II. 677—his collection of
 skulls, XVII. 563.
 Morveau. See Guyton-Morveau.
 MOSAIC WORK, XV. 653; XVII. 59.
 — Dispensation, I. 466—law, 167—
 limited to one nation, that of Israel,
 ib., 468—abolition of, 468—a system of
 temporal rewards and punishments, 470
 —does not teach the doctrine of future
 retribution, 475, 478—distinguished by
 the multitude and minuteness of its
 regulations and observances, 469; the
 object of these, ib.—its ceremonial and
 civil laws, ib.—typical meaning of its
 ceremonies, 470—summary of its charac-
 teristic features, 479—not binding on
 Christians, 469, 479.
 Moscas, II. 683.
 Moschopolus on magic squares, XIII. 810.
 MOSCHUS, Greek poet, XV. 653.
 — genus of mammalia, XIV. 205—
 dentition of, XVI. 466, 479.
 Moscow, XV. 653—burnt in 1812, X. 157
 —burnt by the Tartars, XIX. 474—bells
 of, IV. 629—roof of large span at, XIX.
 393, 394—university of, XXI. 492.
 — a Russian government, XV. 657;
 XIX. 521.
 MOSEIRAH, island, XV. 657.
 Moseley (Rev. Henry), on mechanics, XIV.
 380, 381, 404, 418—on the stability of
 floating bodies, XX. 156, 157.
 MOSELLE, department of France, XV. 657;
 XIV. 697—wine, specific gravity of, XII.
 89.
 — river, XV. 658; XIX. 144, 145;
 XXI. 672.
 Mosely (Prof.), on hydrodynamics, XII.
 76—on Appold's pump, 180—on Self's
 pump, 175.
 MOSER (Johann Jacob), XV. 658.
 — (Justus), XIII. 726.
 — on magnetism, XIV. 13.
 MOSES, XV. 658; XII. 766; XVII. 193—
 objections to his account of the creation,
 I. 455—makes no mention of a future
 state, 473—revelations probably made
 to, which were not intended for all the
 people, 474—his account of the deluge,
 VII. 721—whether the author of the
 Pentateuch, XVII. 400—psalms ascribed
 to, XVIII. 679—sanitary influence of
 the laws of, XIX. 602—slavery autho-
 rised by, XX. 319—law of, on divorce,
 VIII. 67. See Mosaic Dispensation.
 — a kind of boat, IV. 800.
 MOSHEIM (J. Lorenz von), XV. 659—on
 the theological system of Luther, I. 21
 —on ancient mysteries, XV. 755.
 Moshesh, Kafrarian chief, XIII. 35.
 MOSKONISI, island, XV. 660.
 Moslem. See Mussulman.
 Mososaurus, fossil reptile, XVII. 640.
 Mosotti (M.), on the micrometer, XIV.
 747—on optics, XVI. 550.
 MOSQUE, XV. 660.
 Mosquito, insect, IX. 224—in Northern
 Asia, III. 741.
 — SHORE and COAST, XV. 660.
 — Indians, in Honduras, XI. 610.
 Moss, order of plants, V. 216.
 Mosses, XV. 665—organs of reproduction,
 V. 144—Irish moss, 218—rock, 217—
 rein-deer, ib.—Iceland, ib.—region of,
 227; XVII. 627—Dellenius' Historia
 Muscorum, VIII. 30.
 — in Lancashire, XIII. 177. See Bogs.
 — (J. W.), his work on classical bib-
 liography, IV. 711.
 Mossman on the colony of Victoria, IV.
 288.
 MOSTAGANEM, town in Algeria, XV. 665.
 MOSTAR, town of Bosnia, XV. 665.
 MOSTYN, in Wales, XV. 665.
 MOSUL, Turkish town, XV. 665; XVI.
 272.
 Motacilla, genus of birds, XVI. 756.
 Motala, in Sweden, manufactures of, XX.
 862.

MOT—MOU

Motella, genus of fishes, XII. 270.
 MOTHE-LE-VAYER (François de la), XV.
 666.
 Mother-of-pearl, XV. 348; XVII. 356—
 optical properties of, XVI. 540, 617—
 micrometer, VI. 346; XIV. 759.
 Moths, IX. 210—processionary, 213—great
 owl, 215—gamma, ib.—gooseberry, 216
 —clothes, 217—in furs, X. 350—their
 insensibility to pain, III. 177—their
 mode of entering bee-hives, IV. 575—
 their injuries to bee-hives, 585—de-
 struction of, XXI. 549.
 MOTION, XV. 666; VIII. 321—vibratory,
 I. 919—laws of, VIII. 326 *et seq.*; XIV.
 402, 403—change of, VIII. 331—com-
 position of, 333—reduction of motions,
 340—accelerated and retarded, 344;
 XIV. 385—Aristotle on, III. 543—of the
 surface of a fluid, XIV. 386—of a rigid
 solid, 387—of a point, 384—resolution
 and composition of, 385—link-motion,
 401; XX. 586—parallel, 591; XIV. 402
 —of air, XVIII. 58, 59—of rivers and
 canals, XIX. 182—forces acting on the
 motions of a ship, XX. 158 *et seq.*, 180
 —Zeno's arguments against, XXI. 769.
 See Dynamics, Mechanics, Statics.
 — of the human body, III. 40—volun-
 tary, proper to animals, 170—of fishes,
 XII. 218—through the agency of mus-
 cles, XVII. 670—nerves of, 171, 172—
 in the leaves of plants, V. 108.
 MOTRIL, town in Spain, XV. 666.
 Motschoulsky (Victor de), his works on
 insects, IX. 24.
 Motte (Henri de la), executed for trea-
 sonable correspondence, V. 504.
 Mottoes, in heraldry, XI. 338.
 MOTTRAM-IN-LONGDENDALE, in Chester,
 XV. 666.
 Motya, taken by Dionysius, VI. 283.
 MOUFET (Thomas), XV. 666—his work on
 insects, IX. 2.
 Moufflon of Sardinia, XIX. 634.
 MOUKDEN, Chinese town, XV. 666.
 MOULD, XV. 666—in cannon-casting, VI.
 182—in flint-glass making, X. 673—
 moulds in stone masonry, XX. 729, 730.
 — fungus, V. 217.
 — vegetable soil, VI. 524; XV. 216—
 its uses in the growth of plants, ib.—its
 formation ascribed to worms, 217.
 Moulding, of glass, X. 673—of specula,
 XXI. 135—in ship-building, XX. 184.
 MOULDINGS, in architecture, XV. 666; III.
 489, 511—Greek, 467, 489; XX. 732—
 Roman, ib.; III. 476, 489—Italian, 477
 —in plastering, V. 743—in joinery, XII.
 807, 808—to draw Grecian, XX. 732—of
 mediæval architecture, 734.
 MOULE, in Guadeloupe, XV. 666.
 Moulin (Du), on Feudal law, IX. 523—his
 work against Milton, XV. 27.
 — LILLE, XV. 666.
 Moulineau (M.), roof constructed by, XIX.
 388.
 MOULINS, town in France, XV. 667.
 MOULMEIN, in Hindustan, XV. 667—teak-
 wood of, XXI. 276.
 Moulting, in annulose animals, IX. 57—in
 birds, 496.
 Moul't's filter, IX. 582.
 Mound, in embanking, VIII. 644.
 MOUNT EVEREST, one of the Himalayas,
 XV. 667; XVI. 141.
 Mountain, party at the French Revolution,
 X. 71 *et seq.*
 Mountain-barometer, IV. 465.
 MOUNTAINS, XV. 667—attraction of, I. 834
 —snow line on, II. 624—afford proofs
 of beneficent design and adaptation to
 the wants of man, 669—their influence
 on climate, 671—barometrical measure-
 ments of, 462—cold of, VI. 772; VII.
 100—heat of the sun's rays on, VI. 781
 electrical phenomena of, VIII. 583—
 distribution of, XVII. 592; in Scotland,
 XIX. 793—height of, in different quar-
 ters of the world, XVII. 642—elevation
 of the German, X. 583.
 — of the moon, II. 213.
 Mounting of telescopes, XXI. 143, 144.

MOU—MUI

- MOUNTMELLICK, Irish town, XV. 667; XVIII. 729, 730.
 MOUNTRATH, Irish town, XV. 667.
 MOUNT'S BAY, in Cornwall, XV. 667.
 MOUNTSOREL, in Leicestershire, XV. 667.
 Mononio, river in Lapland, XIII. 234.
 Mouravieff (General), XIX. 511.
 Mourgue (J. A.), on mortality, XV. 607, 622.
 Mouine Mountains, VIII. 122.
 MOURNING, XV. 667.
 MOURZUK, XV. 668; IX. 528.
 Mouse, XIV. 181—means of destroying mice, XXI. 548.
 Mousseline-de-laines, VIII. 315.
 Moustache, IV. 529.
 Mout, or Moot, in Turkey, XV. 668.
 Mouth, human, III. 47—in insects, IX. 31—annelides, XI. 293—arachnides, III. 373—diseases of, in domestic animals, XXI. 564.
 Moutiers, in Sardinia, method of making salt at, XIX. 587.
 MOUTON (Jean), musician, XV. 668.
 Moutray (Captain), V. 494.
 Mouzé (M.), on subterranean fortification, IX. 816.
 MOVEMENT in music, XV. 668.
 MOWEE, one of the Sandwich islands, XV. 668—Cook's discovery of, VII. 340.
 Mowing of corn-crops, II. 313.
 Moxon (Joseph), his work on joinery, XII. 804.
 — on type-founding, XXI. 402.
 Moxos, South American tribe, IX. 349.
 Moy, Irish river, fisheries of, IX. 624, 625.
 Moyes (Dr Henry), blind mathematician, IV. 780.
 Mozabites, African race, II. 566.
 MOZAMBIQUE, XV. 668; II. 228—current, IV. 176—channel, XV. 670—weights and measures, XXI. 812.
 MOZART (J. C. W. Gottlieb), XV. 670.
 MOZDOK, in Russia, XV. 673.
 Mozing, process in woollen manufacture, XXI. 923.
 MOZUFFURNUGUR, in Hindustan, XV. 673.
 Mstislavl, Russian town, XV. 673.
 Mu, Egyptian deity, VIII. 437.
 Mucilage, II. 380—its nutritive qualities, VIII. 20.
 Muckersy (Rev. J.), savings bank established by, XIX. 656.
 Mucous membrane, II. 835—papillæ of, 836—its connection with the skin, 838.
 Mucus, its properties as an aliment, VIII. 19.
 Mudar fibre, XXI. 782.
 Mud baths, XV. 39.
 — volcanoes. See Volcano.
 Mud-fish, XII. 316.
 Mud-tortoise, XIX. 17.
 Mudge (Thomas), XV. 673—his invention of the lever escapement, VII. 32—on the fusee of watches, 28.
 — (WILLIAM), XV. 673—assisted in the measurement of the English arc of meridian, I. 775, 837; IX. 551—employed on the ordnance survey, XXI. 331.
 Mudie (Robert), on the elevated haunts of the ptarmigan, XX. 226.
 Muffle-furnaces, X. 356.
 MUFTI, XV. 673.
 MUGGLETON (Ludowick), XV. 673—Mugletonians, ib.
 Muggy, bird, XVI. 756.
 Mugil, genus of fishes, XII. 291—fossil, 345.
 Mugilidae, family of fishes, XII. 291.
 Mugiloidel, family of fossil fishes, XII. 345.
 Mugiloides, genus of fishes, XII. 291.
 MUHALICH, town in Turkey, XV. 674.
 MÜHLENBACH, in Transylvania, XV. 674.
 MÜHLHAUSEN, town in Prussia, XV. 674.
 Muir (Thomas), convicted of sedition, V. 550.
 — (Messrs), their Bavarian beer, V. 336.
 Muirhead (J. P.), his work on Watt's Mechanical Inventions, I. 866, n. 3, 870; XXI. 773, n.—his Life of Watt, ib.

MUJ—MUL

- Mujelibé, mound of, at Babylon, IV. 342, 343.
 MULA, town in Spain, XV. 674.
 Mulatto, XIV. 719.
 Mulberry, V. 206; XVII. 764; XX. 288, 291, 292—culture of, XI. 717—in China, VI. 588—Granada, X. 794—Russia, XIX. 520—paper made from the bark of the tree, XII. 694—in Lombardy, XIII. 653, 654—France, X. 254, 255—shoots used as fodder, XVI. 142—only natural food of the silkworm, XX. 291—strength of the wood, 757.
 — order of plants, V. 206.
 MULCASTER (Richard), XV. 674.
 Mulder (M.), on agricultural chemistry, II. 376, 377—his analysis of tea, XXI. 82, n.—on the components of grape-juice, 889.
 Mule-jenny, VII. 442, 445; XX. 510.
 Mules, in France, X. 249—in Bolivia, IV. 827—Egypt, VIII. 432—their barrenness, III. 175—strength, XIV. 417.
 — (spinning), XX. 511—self-acting mules, VII. 445; XIV. 251.
 Muley Hamet, king of Fez, XVIII. 383.
 — Moloch, XVIII. 384.
 Mulgrave (Lord), on the temperature of the ocean, VI. 777.
 MÜLHEIM-AM-RHEIN, in Prussia, XV. 674.
 MÜLHEIM-AM-RUHR, in Prussia, XV. 674.
 MULHOUSE, or Mulhausen, in France, XV. 674.
 Mulio, genus of insects, IX. 233.
 MULL ISLAND, XV. 674.
 Müller (C. L.), his work on insects, IX. 11.
 — (Dr Max), XVII. 529, 536, 537.
 — (F. Paludan), Danish poet, XIX. 695.
 — (G. FRIEDRICH), XV. 675.
 — (JOHANN), or Regiomontanus, XV. 675. See Regiomontanus.
 — (JOHANN), Swiss historian, XV. 675.
 — (J. F. WILHELM), engraver, XV. 676.
 — (J. GOTTHARD VON), engraver, XV. 676.
 — (Johannes), on the rhizopoda, XXI. 1007.
 — (KARL OTTFRIED), XV. 676; XVII. 525—on the plays of Epicharmus, IX. 271—on Euripides, 379—on the Heraclidae, XI. 318—his history of the Doric race, VIII. 109—on the origin of the Etruscans, IX. 356, 357, n. 1—on the Etruscan language, 360—on the Pelasgi, XVII. 370—on philology, 533.
 — (M.), of Bolbec, his photographic process, XVII. 549.
 — (Mr), on roofs, XIX. 382.
 — on fishes, XII. 249 *et seq.*, 328—their classification, 226.
 — on theology, XXI. 200.
 — (OTHON FREDERIK), naturalist, XV. 677—on animalcules, III. 193, 194—on hydrachnæ, 388—on a species of vibrio, 200—his work on insects, IX. 6.
 — (Prof.), on the locomotive faculty, XIV. 568—on the field of vision, 573.
 — (Prof. Johann), on the erectile vessels, II. 800, 801—on nervous matter, 809—on the brain, 820, 821—on the structure of the glands, II. 768.
 — (WILHELM), poet, XV. 677—his poetry, XVIII. 119.
 — (WILLIAM JOHN), English painter, XV. 677.
 Muller's glass, mineral, XV. 69.
 Mullet, fish, XII. 290—as food, IX. 764.
 — in heraldry, XI. 326, 331.
 Mullicite, mineral, XV. 101.
 Mullidae, family of fishes, XII. 279.
 MULLINGAR, XV. 677; XXI. 839.
 Mulling's quantity battery, XXI. 615—his intensity battery, 615.
 Mullion, in architecture, III. 511.
 Mullus, genus of fishes, XVI. 279.
 Mulsant (E.), his work on insects, IX. 21.
 Multan, in the Punjab, XVIII. 690, 691—language of, XIII. 207.
 Multifernan Abbey, Westmeath, XXI. 841.

MUL—MUR

- Multiple, in geometry, X. 517.
 Multiplication, in algebra, II. 491, 495—in arithmetic, III. 585—of vulgar fractions, 598—of decimals, 601, 602, 603—by Napier's rods, XV. 777.
 Multipliers of electricity, VIII. 616—Cavallo on, VI. 346.
 Multitubular horizontal steam-boilers, XX. 616.
 Mummius (Lucius), Roman consul, Corinth taken by, VII. 368.
 MUMMY, XV. 678—Egyptian mummies, VIII. 444—of the Guanches, VI. 163. See Embalming.
 — wheat, V. 164.
 Mumps, disease, XXI. 564.
 Mun (Mr), on political economy, XVIII. 214, 216.
 Muna, pilgrimage to, XIV. 379.
 MÜNCHHAUSEN (H. K. Friedrich von), XV. 678.
 — on animalcules, III. 204.
 Munck (Jens), voyage of, XVIII. 169.
 Munda, battle of, XIX. 327.
 MUNDAY (Anthony), dramatist, XV. 678.
 MUNDEN, town in Hanover, XV. 678.
 — (JOSEPH SAUNDERS), comedian, XV. 678.
 MUNDI, in Hindustan, XV. 678.
 MUNDINGOES, XV. 578. See Manding.
 MUNDOTE, in Hindustan, XV. 678.
 Mundrucu, South American tribe, IX. 348.
 Mundus, VII. 312.
 MUNEEPOOR, in Hindustan, XV. 678.
 Mungo trade, XXI. 918.
 MUNICH, XV. 678; IV. 519—Academy of Sciences at, II. 67—royal library at, XIII. 419—Count Rumford's improvements in, XXI. 230—university, 492.
 MUNICIPAL CORPORATION, MUNICIPALITY, XV. 680; XVII. 289, 293—rights, VIII. 781. See Borough.
 — cities and boroughs, VIII. 720, 721.
 Munjeet, Indian dye, V. 196.
 Munro (Sir Hector), XI. 488—his victory at Buxar, VI. 25—fort of Trincomalie occupied by, XXI. 350.
 — (Sir Thomas), on India, XI. 514 n., 525 *et seq.*—on Canara, VI. 160, 161.
 Munsu, one of the Shetland islands, XX. 113.
 MUNSTER, Irish province, XV. 686—united presbytery of, XII. 532.
 — town and government in Prussia, XV. 687; XXI. 844—university of, XVIII. 673—taken possession of by the Anabaptists, II. 742.
 — (Count), on fossils, XVII. 100 *et seq.*
 — (SEBASTIAN), XV. 688—on dialling, VII. 775—his Hebrew Bible, XIX. 835.
 MÜNSTERBERG, town in Prussia, XV. 688.
 Munt, Egyptian deity, VIII. 437.
 Munt-hotp, Egyptian king, VIII. 455.
 Muntins, in joinery, V. 751.
 Muntjaks, in zoology, XIV. 209.
 Muntz (J. H.), on encaustic painting, VIII. 654.
 — metal, XX. 174.
 MUNTZER or MUNZER (Thomas), anabaptist, XV. 688; II. 742; XIII. 729, 731, 732.
 Munychia, a port of Athens, IV. 171.
 Muohwa oil, XVI. 496.
 Murad Bey, VIII. 488.
 Muræna, genus of fishes, XII. 231—M. Helena, 230.
 Murænesox, genus of fishes, XII. 232.
 Murænidae, family of fishes, XII. 231.
 Murænoblenna, genus of fishes, XII. 232.
 Murænopsis, genus of fishes, XII. 233.
 MURAL CIRCLE, XV. 688; IV. 153.
 Murano, near Venice, glass-works of, XXI. 539.
 MURAT (Joachim), XV. 688; V. 615; XII. 653; X. 137 *et seq.*, 160; XX. 261, 262, 264.
 MURATORI (L. Antonio), XV. 689.
 Murchison (Sir Roderick Impey), his classification of Devonian rocks, XV. 199—on the rocks of Russia, 205, 215; XIX. 517, 518—on gold in Russia, XV. 233—on the rocks of Germany, X. 584—on

MUR—MUS

- the fossils called conodonts, XVII. 115—on the rocks of Scotland, XIX. 793 and n.
 Murchisonia, fossil mollusks, XVII. 109, 111.
 Murchisonite, mineral, XV. 70.
 MURCIA, Spanish province, XV. 690; XX. 493—climate of, 488.
 — Spanish city, XV. 691.
 Murder, XI. 604; XIV. 429; XV. 567—its punishment in China, VI. 566. See Infanticide.
 Murdoch (Mr), the inventor of gas-lighting, X. 410.
 — (Rev. Patrick), on the conical development, X. 493.
 — (William), his steam-carriage, I. 881—his steam-engine valves, XX. 582.
 Murdoch's boring apparatus, V. 44.
 MURE (Sir William), Scottish poet, XV. 691.
 — (Colonel), on Herodotus, XI. 356—Homer, 600—Taygetus, XIII. 147—lake Copais, VII. 345.
 MURER (Marc Antoine), grammarian, XV. 691; XVII. 523.
 — (M.), on the population of the Pays de Vaud, XV. 602—on births in Switzerland, XVIII. 348, 349.
 — town in France, XV. 692; X. 405.
 Murex, genus of mollusks, XV. 387—purple dye from, XX. 906; XXI. 406.
 Murghab, antiquities at, XVII. 432.
 Muriacite, mineral, XV. 96.
 Muriatic acid gas, poisonous qualities of, XIV. 435; XVIII. 135. See Hydrochloric Acid.
 Muriazit, mineral, XV. 96.
 Muricidae, family of mollusks, XV. 387—fossil, XVII. 109.
 Muridae, family of rodents, XVII. 632.
 MURILLO (B. Estevan), XV. 692; III. 712; XVII. 75—price paid for one of his pictures, 86.
 MUROM, town in Russia, XV. 694.
 MUROS, town in Spain, XV. 694.
 MURPHY (Arthur), dramatist, XV. 694.
 — (JAMES CAVANAH), architect, XV. 694.
 — (ROBERT), mathematician, XV. 694.
 Murrain, in cattle, II. 264—renders their flesh poisonous, XIV. 439.
 MURRAY (Dr Alexander), XV. 694; XIII. 101.
 — (Andrew), his work on insects, IX. 24—on a species of malapterurus, XII. 261.
 — (Dr JOHN), chemist, XV. 695—his advocacy of Werner's views, XII. 684—his opposition to Leslie's views on the radiation of heat, XI. 264.
 — (JOHN), publisher, XV. 695.
 — (Sir JOHN), V. 613.
 — (Honourable Captain Erskine), his expedition to Tanganon, V. 48, n.
 — (LINDLEY), XV. 695.
 — (Mr), British minister in Persia, XVII. 442.
 — (Mr), of Leeds, his boring machine, V. 43.
 — regent of Scotland, XIX. 780 *et seq.*, 787.
 — (Sir ROBERT), XV. 695.
 — (WILLIAM), Earl of Mansfield, XV. 696—on the law concerning carriers, VI. 274.
 — Australian river, XV. 696; IV. 293, 296, 281.
 Murray's slide-valve, in steam-engines, XX. 581.
 MURREE, in Hindustan, XV. 697.
 Murtumbidgee, Australian river, XV. 697; IV. 255.
 MURVIEDRO, town in Spain, XV. 697.
 Murzuk, II. 223, 224.
 Mus, in zoology, XIV. 180.
 MUSA (Ibn Nosseyr), XV. 697.
 — the ancient name of Mocha, III. 361.
 Musaceæ, nat. order of plants, V. 211.
 MUSÆUS, Greek poet, XV. 698.
 — German novelist, XIX. 291.

MUS—MUS

MUSÆUS, grammarian, XV. 698.
 Musca, genus of insects, IX. 249.
 Muscardine, in zoology, XIV. 180—hybernation of, III. 180.
 — disease in silk-worms, XVII. 697.
 Muscat, XV. 698; III. 359—Imam or Imaum of, 360—weights and measures, XXI. 812.
 Muscatel raisins, XVIII. 799.
 Muschelkalk, XV. 206—fossil fishes of, XII. 348—in Germany, X. 584.
 Muschenbroeck. See Musschenbroek.
 Muschman on magnetism, XIV. 42.
 Musci, nat. order of plants, V. 216. See Mosses.
 Muscicapa, genus of birds, XVI. 749.
 Muscides, family of insects, IX. 247.
 Muscipeta, genus of birds, XVI. 749.
 Muscles, II. 821; III. 37—Galen's knowledge of, II. 753—contractility of, 822; XVII. 652, 670, 671—general remarks on, III. 39—composition of, IX. 758—electricity of, XVII. 672—of brutes, III. 91—of the elephant's trunk, 101—not apparent in animalcules, 195—their great power in ants, 262—of fishes, XII. 218; IX. 763—of mollusks, XV. 326, 332 *et seq.*—reptiles, XIX. 14; serpents, 43—muscular tissue of animals, III. 171 juice of, its chemical composition, VI. 523—muscular sense, XIV. 569; XVII. 677—diseases of, in the domestic animals, XXI. 557.
 Muscovado sugar, XX. 795.
 Muscovite, mineral, XV. 77.
 MUSCULUS (Wolfgang), XV. 699.
 Museum, in ancient Athens, IV. 169.
 Museo Borbonico, at Naples, XV. 781.
 MUSES, XV. 699.
 MUSEUM, XV. 699—museums in Italy, XII. 661—of the Capitol, XIX. 369.
 — British. See British.
 — of university of Edinburgh, VIII. 399—Professor Jameson's exertions in forming, XII. 685—collection of skulls in, XVII. 563.
 — National Industrial, Edinburgh, VIII. 399; XXI. 324—Dr G. Wilson curator of, 874.
 Museums (trade), XXI. 323, 324—circulating, 324.
 Mushed, Persian town, XIV. 546.
 Mushet (Mr), on charcoal, VI. 421.
 — (Mr), on cash payments, XV. 424 and *n.* 6—on par of exchange, IX. 432.
 Mushet's furnace, X. 356.
 Mushroom anchor, III. 118.
 — order of plants, V. 217.
 Mushrooms, V. 167, 142—yellow dye from, VIII. 299—culture of, XI. 736—poisonous kinds of, XIV. 439—in Lapland, XIII. 242.
 Mushtāhids, in Persia, XVII. 426.
 Music, XV. 700—in Athens, IV. 211 and *n.* 1—Austria, 318—China, VI. 580—Egypt, VIII. 443, 448—Etruscan, IX. 360—Hindu, XI. 477—Java, XII. 706—Denmark, XIX. 696—Vienna, XXI. 584—principles on which it is founded, I. 728—academies of, II. 68—air in, 430—Aretino's improvements in, III. 522—beating time in, IV. 529—taste for, in Brazil, V. 298—Cavallo on the temperament of musical intervals, VI. 346—characters used in, 419—composition in, VII. 226—design, 758—discord, VIII. 44—harmonics and harmony, XI. 230—intonation, 436—melody, XIV. 485—pleasure derived from, 564, *n.* 4—symphony, XX. 898—temperament of the musical scale, XXI. 148—thorough bass, 237—tonality, 303.
 Musical glasses, X. 675; XI. 230.
 — instruments, XV. 708, 740—principles of, II. 107, 109—manufacture of, at Myreccourt, XV. 268.
 — sounds, II. 107—distinction between them and other sounds, 108.
 Musicians, blind, IV. 781.
 Musignano (Prince of), his catalogue of the cyprinidae, XII. 257.
 Musk, XV. 743.
 — deer, XIV. 205; XVII. 632—of

MUS—MYH

Java, XII. 704—of India, XI. 454—Nepaul, XVI. 143—Tibet, XXI. 247.
 Musk ducks, XVI. 817.
 — ox, XIV. 215; XVII. 633.
 — rat, XIV. 183—its fur, X. 348.
 Musketry, sound of, II. 107.
 Muskets, XI. 96; XX. 211—Enfield rifled, XI. 101—boring of, V. 44.
 Muskingum, river in Ohio, XVI. 489.
 Muslims, in Syria, XX. 907.
 MUSLIN, XV. 743—folding of, VI. 92—manufacture of, in India, VII. 437; IV. 650; XI. 458—first attempts to manufacture it in Britain, VII. 449—origin of the name, XV. 666—embroidery of XIV. 285—sewed muslins, X. 650; of Antrim, III. 286—manufacture of, at Mulhouse, XV. 674; in France, X. 253.
 Musmon, in zoology, XIV. 212.
 MUSONIUS (C. Rufus), XV. 743.
 Musophaga, genus of birds, XVI. 783.
 Musquash. See Musk Rat.
 MUSSCHENBROEK (Peter Van), XV. 743—on dew, VIII. 766, 767—on the Leyden phial, 526; I. 737—on magnetic force, XIV. 4—on meteorolites, 633—his pyrometer, XVIII. 702—his experiments on the strength of woods, XX. 757.
 Mussel, common, XV. 348, 345; IX. 765—fresh-water, XV. 349—river, *ib.*—pearl, 343, 349.
 MUSSELBURGH, XV. 744.
 MUSSET (L. C. Alfred de), XV. 744.
 MUSSOUREE, in Hindustan, XV. 744.
 MUSSULMAN, XV. 745, 300—his character in India, XI. 463.
 MUSTAPHA, I., II., III., IV., Turkish sultans, XV. 745; XXI. 369, 370, 373, 376.
 — Bairatar, XXI. 372, 373.
 MUSTARD, XV. 745—culture of, II. 336; XI. 744—plant of Scripture, V. 199—adulterations of, IX. 770.
 Mustela, genus of mammalia, XIV. 156, 157—teeth of, XVI. 479.
 Mustelidae, dentition of, XVI. 461.
 Mustelus, genus of fishes, XII. 324.
 Mut, Egyptian goddess, VIII. 436.
 Mutæ, tribe of insects, IX. 168.
 Mutilation, crime of, XIV. 428. See Castration.
 Mutilla, genus of insects, IX. 194.
 MUTINA, XV. 745, 296—battle of, XIX. 328.
 MUTINY, XV. 745—in the British fleet at the Nore in 1797, V. 560; VIII. 252—of the Indian Sepoys in 1857, XVI. 301; measures for suppressing, 312.
 MUTIUS (Caius), XV. 745; XVIII. 366; XIX. 298.
 — SCAEVOLA, XV. 745.
 Muttahîr, III. 363.
 Mutton, IX. 762.
 MUTTRA, in Hindustan, XV. 745.
 Mutual insurance societies, XII. 408.
 Mutule, in Doric architecture, III. 511.
 Muyscas, Mexican race, II. 683.
 MUZIANO (Girolomo), painter, XV. 745.
 Mya, genus of mollusks, XV. 350—fossils, XVII. 108.
 Myacidae, family of mollusks, XV. 350.
 Myacites, fossil mollusks, XVII. 108.
 Myalina, fossil mollusks, XVII. 106.
 Mycale, battle of, IV. 200.
 Mycelium of mushrooms, V. 147.
 MYCENÆ, or Mycene, Grecian city, XV. 746—architectural remains at, III. 440—sculptured lions at, XIX. 853.
 Mycetes, genus of mammalia, XIV. 142.
 Mycetobia, genus of insects, IX. 228.
 Mycetophaga, tribe of insects, IX. 142.
 Mycetophagus, genus of insects, IX. 142.
 Mycetophila, genus of insects, IX. 229.
 MYCONE, island, XV. 746.
 Mycteria, genus of birds, XVI. 800.
 Mycterus, genus of insects, IX. 133.
 Mydas, genus of insects, IX. 232.
 Mydasii, family of insects, IX. 232.
 Mydaus, genus of mammalia, XIV. 158.
 Myelin, mineral, XV. 84.
 Mygale, genus of arachnides, III. 377.
 — genus of mammalia, XIV. 151—teeth of, XVI. 451.
 MYHERE, in Hindustan, XV. 746.

MYL—MYT

Mylabris, genus of insects, IX. 135.
 MYLÆ, ancient town in Sicily, XV. 746.
 MYLASSA or Mylasa, in Asia Minor, XV. 746.
 Mylesinus, genus of fishes, XII. 247.
 Myletes, genus of fishes, XII. 246.
 Myleus, genus of fishes, XII. 247.
 Myliobates, genus of fishes, XII. 328, 320, 326—fossil, 341; XVII. 119—teeth and jaws of, XVI. 422, 423, 424.
 Myliobatidae, family of fishes, XII. 328—fossil, XVII. 119.
 Mylius on pseudonymous books, IV. 712.
 MYLNE (Robert), architect, XV. 746—his plan of Blackfriars Bridge, III. 409—his centre for it, VI. 382.
 Mylodon, fossil sloth, XVII. 173, 639.
 MYMUNING, in Hindustan, XV. 746.
 Mynlops, genus of insects, IX. 139.
 MYNPOOREE, in Hindustan, XV. 747.
 Myochama, genus of mollusks, XV. 350.
 Myoconcha, fossil mollusks, XVII. 108.
 Myodites, family of insects, IX. 134.
 Myology, III. 37—comparative, 91—of the domestic animals, XXI. 557. See Muscles.
 Myopa, genus of insects, IX. 245.
 Myophoria, genus of mollusks, XV. 349—fossil, XVII. 106.
 Myoporaceæ, nat. order of plants, V. 202.
 Myopotamus, genus of mammalia, XIV. 187.
 Myopsidae, family of mollusks, XV. 400.
 Myopteris, genus of mammalia, XIV. 149.
 Myosen, Norwegian lake, XVI. 320.
 Myothera, genus of birds, XVI. 753.
 Myoxia, genus of mammalia, XIV. 180.
 Myremill, system of irrigation at, II. 294.
 Myriacanthus, genus of fossil fishes, XII. 340.
 MYRIAPODA, XV. 747—fossil, XVII. 103.
 Myricaceæ, nat. order of plants, V. 207.
 Myrina, genus of insects, IX. 208.
 Myripristis, genus of fishes, XII. 279—fossil, 343.
 Myristicaceæ, nat. order of plants, V. 204.
 Myrmecia, genus of arachnides, III. 383.
 Myrmecobius, marsupial animal, dentition of, XVI. 448.
 Myrmecophaga, genus of mammalia, XIV. 191. See Ant-eater.
 Myrmecophila, genus of insects, IX. 158.
 Myrmelion, genus of insects, IX. 178.
 See Ant-lion.
 Myrmelionides, family of insects, IX. 178.
 Myrmica, genus of insects, IX. 194. See Ant.
 Myrobalan, order of plants, V. 192.
 MYROBALANS, XV. 750.
 MYRON, Greek statuary, XV. 750; XIX. 854.
 MYRRH, XV. 750; V. 190—order of plants, *ib.*
 Myrsilus, king of Lydia, VI. 169.
 Myrsinaceæ, nat. order of plants, V. 199.
 Myrtaceæ, nat. order of plants, V. 192.
 Myrtle, order of plants, V. 190.
 Myrtle-wax, V. 207; XXI. 779.
 Myrto, XX. 377.
 MYRIA, in Asia Minor, XV. 751—coins of, XVI. 374.
 MYSOKE, in India, XV. 751—conquered by the British, XI. 502.
 Mysorine, mineral, XV. 103.
 MYSTERIES, XV. 752—Eleusinian, VIII. 629—of free-masonry, XIV. 337—sacred dramas, VIII. 143—apostolic meaning of the word Mystery, I. 470—error of attempting to explain those of the Christian system, 517, 518.
 MYSTICISM, XV. 755.
 Mystics, I. 327.
 Mystriophis, genus of fishes, XV. 233.
 Mystriosaurus, fossil reptiles, XVII. 152.
 MYTENS (Daniel), painter, XV. 759.
 MYTHOLOGY, XV. 759—Egyptian, VIII. 435—Icelandic or Runic, 388—Bryant on, V. 705; VII. 711 *et seq.*—of Crete, 493—Strabo on, *ib.*—Heyne on, XI. 366—illustrations of, from coins and medals, XVI. 351—its relation to philology, XVII. 527—comparative, 537—pagan, in reference to a future state, I. 459—Russian, XIX. 546. See Deluge, Egyptians, &c.

MYT—NAN

MYTILENE, XV. 768—aqueduct at, III. 334.
 Mytilidae, family of mollusks, XV. 348—fossil, XVII. 106.
 Mytilus, genus of mollusks, XV. 348, 347—embryo of *M. edulis*, 355—fossil, XVII. 106.
 Mrs, in Caria, XV. 768.
 Myxine, genus of fishes, XII. 227, 228.
 Myxinidae, family of fishes, XII. 228.
 Myxodes, genus of fishes, XII. 309.
 Myxospores, V. 147.
 Myzine, genus of insects, IX. 195.
 MZENSK, town in Russia, XV. 768.

N

N, letter of the alphabet, XV. 769—in abbreviations, II. 19.
 NAAS, Irish town, XV. 769; XIII. 83.
 NABIS, Spartan tyrant, XV. 769.
 NABLOOS, town in Palestine, XV. 769; XVII. 183.
 NABONASSAR, XV. 769; IV. 382—era of, VI. 671.
 Naccari (F. L.), on birds, XVI. 731.
 Nachet (M.), his object-glasses, XIV. 779, 780—his microscopes, 783, 784.
 NACHTSHEVAN, in Russia, XV. 769, 770.
 Nacrite, mineral, XV. 79.
 Nadir, IV. 1.
 — SHAH, XV. 770; IV. 639; XVII. 440; XI. 480.
 NÆVIUS (Cneius), Roman poet, XV. 770.
 NAGASAKI, Japanese town, XV. 770; XII. 696, 697.
 Nagode, or Nagound, Sepoy insurrection at, XVI. 311.
 NAGPORE, in Hindustan, XV. 770—war with the rajah of, XI. 507.
 Nagygite, mineral, XV. 118.
 NAGY, XV. 771.
 NAGY-BANTA, in Hungary, XV. 771.
 NAGY-BECSKERÉK, in Hungary, XV. 771.
 NAGY-ENYED, in Transylvania, XV. 771.
 NAGY-KAROLY, in Hungary, XV. 771.
 NAGY-KÖRÖS, in Hungary, XV. 771.
 NAGY-SZEBEN, XV. 771. See Hermannstadt.
 NAGY-VARAD, XV. 771. See Grosswardein.
 Naiadaceæ, nat. order of plants, V. 214.
 NAIADS, XV. 771; XIX. 180.
 NAIGEON (Jacques André), XV. 771.
 NAILS, XV. 771—horse-shoe, or stubs, gun-barrels made from, XI. 96—number used at Christ's crucifixion, VII. 519.
 — of the human body, II. 835; XVII. 667—fashion of wearing them long, IX. 488.
 Nail-trade of Birmingham, VIII. 729.
 Nain, in Labrador, XIII. 141.
 NAIRN, XV. 771.
 NAIRNSHIRE, XV. 772—agricultural statistics, XIX. 796, 797, 798—population, 799.
 Nairne (Mr), on electricity, VIII. 589—his claims to the invention of the differential thermometer, XIII. 345—on pneumatics, XVIII. 39.
 Nairs, XI. 467; XIV. 104, 105.
 Nais, genus of annelides, XI. 302.
 Naishápúr, in Persia, XVII. 422.
 Naja, genus of serpents, XIX. 64.
 Nama, sect of the, V. 267.
 NAMAQUA LAND, XV. 772.
 Names of hounds, XI. 770.
 NAMUR, in Belgium, XV. 772—sieges of, VII. 65.
 Nana Sahib, rajah, XVI. 305—his atrocities at Cawnpore, *ib.*, 306.
 Nanak, first teacher of the Sikhs, XVIII. 692.
 NANCOWRY, island, XV. 773.
 NANCY, town in France, XV. 773; XIV. 697—population, X. 277.
 Nandou, bird, XVI. 796.
 Nandus, genus of fishes, XII. 277.
 NANGASAKI, XV. 773. See Nagasaki.
 Nangis, battle of, X. 167.

NAN—NAP

- NANI, or NANNI (Giovanni), artist, XV. 773.
- Nankeen-yellow, dyeing of, VIII. 300.
— cotton cloth, XV. 774.
- NANKING, in China, XV. 773—large bells in, IV. 629—treaty of, in 1842, VI. 597.
- NANTES, XV. 774—edict of, X. 33, 34; revocation of, XXI. 276—leeches found near, XI. 306—population, X. 277.
- NANTUCKET, American island, XV. 775—fisheries of, V. 480.
- NANTWICH, town in Cheshire, XV. 775—salt at, XIX. 582.
- Naos, in architecture, III. 511.
- NAPAKIANG, XV. 775; XIII. 691.
- Naphtha, in chemistry, VI. 473, 506—in mineralogy, XV. 123—of Baku, IV. 381—of the Caucasus, VI. 341—lamps for burning, XIII. 172—coal-naphtha, X. 433—from peat, XVII. 359—white and black, in Persia, 422—springs of, 602.
- Naphthaline, VI. 504.
- NAPIER (Sir Charles James), XV. 775—his defeat of the Ameers of Scinde, V. 669; XIV. 471—his proceedings in Scinde, XI. 509—his capture of Emaum Ghur, VIII. 643—his entry into Hyderabad, XII. 59.
— (Sir Charles), admiral, his conquest of Acre, V. 668—his command in the Baltic, XIX. 502.
— (David), his improvements in steam-navigation, XX. 639.
— (JOHN), baron of Merchiston, XV. 776—his invention of logarithms, I. 563; III. 801; XIII. 552, 553—his depth and originality of mind, I. 563—his unrivalled merit, 564—his talents as a geometrician, *ib.*—brought decimal notation to its utmost simplicity, 703—on burning mirrors, VI. 5—Napierian logarithms, II. 534—his Rods or Bones, XV. 777—his analogies, XXI. 345, 346.
— (Lord), on the fire of St Elmo, VIII. 588.
— (MACVEY), XV. 778—Sir J. Mackintosh's letters to, respecting his Dissertation on Ethical Philosophy, I. 294.
— (Mr), his printing machine, XVIII. 562.
— (Robert and Sons of Glasgow), on the cohesive strength of iron, XX. 174, 175, 779.
— (Robert), XIII. 553.
— (Sir William), on the British army, III. 662, 668—on Sir J. Moore's retreat to Corunna, V. 605, *n.*—on the character of Sir J. Moore, XV. 528—his account of the battle of Albuera, V. 609, 610—on Sir W. Drummond's conduct regarding the Spanish regency, VIII. 196—on the lines of Torres Vedras, IX. 806.
— (Wm. John, Lord), chief commissioner to China, VI. 596.
- NAPLES, XV. 778; XX. 255—academies of science at, II. 63—Academy of Herculaneum, 70—acquired by Alphonso, V. 621—extensive poisonings at, with aqua tofana, III. 329—army, 655—end of Murat's government, V. 615—parliamentary discussion in 1821 relative to, 630—invaded by Charles VIII., X. 29—war with France in 1798, 110; its state at that time, XVI. 135—appended to Spain, XII. 651—its condition under the Spanish government, XIV. 332—insurrection of 1820, XII. 655—political events of 1848, 657—libraries, XIII. 415—coins, 442, 444; ancient, XVI. 362—monarchy, XV. 414—mortality, 624—savings-bank at, XX. 249—trade, *ib.* university, 255; XXI. 492—soap, XX. 367—Virgil studies there, XXI. 593—weights and measures, 812, 805, 806. See Italy.
— Bay of, XX. 240.
- NAPOLEON I., XV. 782; X. 80, 96, 99 *et seq.*—honours conferred on Volta by, I. 965—his road over the Simplon, II. 624, *n.*—his army and artillery, III. 639, 689, 690—on conscription, 642 and *n.* 2; number of men he raised by, VII. 297, *n.*—his Italian campaigns, X. 99, 118;

NAP—NAR

- IV. 304; V. 558—works at Cherbourg, 305—expedition to Egypt, 564; VIII. 488, 489; X. 109—on the battle of the Nile, VIII. 489—on the site of Alexandria, 420, *n.* 2—Invasion of Syria, V. 568; VIII. 489; X. 112—return from Egypt, V. 568; X. 115—letters to Geo. III., V. 569, 599; X. 116, 135—passage of the Alps, 118; V. 574—appointed first consul, 591; X. 116—irritated by the English journals, V. 592, 593; X. 127—his designs against Malta, V. 592; X. 127—plans for the aggrandisement of his family, 126—conversation with Lord Whitworth, V. 592; X. 127—Lord Whitworth's account of his behaviour at the Tuilleries, V. 594; X. 127—his threatened invasions of England, V. 596; X. 121, 128, 136; XVII. 742—his policy in regard to religion, X. 125, *n.*, 267—his abdication in 1814, 168—return from Elba, V. 618; X. 171; XXI. 828—battle of Waterloo, V. 620; X. 172 (see Waterloo)—his character, 134—his second abdication, 173—surrender to Captain Maitland, *ib.*—sent to St Helena, 174—his death, 184—his remains conveyed to France, 215—his interview with the Emperor Alexander on the Niemen, II. 468—Canova's bust of, VI. 194—on field fortification, IX. 806—at Weimar, X. 698—his code, 132; XIII. 272—crowns himself with the iron crown of Lombardy, XII. 536—at the Kremlin, XV. 656—on the impolicy of bringing back Louis XVI. from Varennes, X. 61—his policy towards the Jews, XII. 782—his partiality to Ossian's poems, XVII. 7—his improvements of Paris, 279—his tomb in Paris, 282—his treatment of Pope Pius VII. 747—his treatment of the Poles, XVIII. 153—police under, 188, 191—post-office under, 421—his treatment of Prussia, and war with, 656, 657—policy in Spain, XX. 472—his treatment of M. de Staël, 526—her unfavourable account of him, 527; his act of mediation for Switzerland, 886—manufacture of beet-sugar encouraged by, 798—his connection with Talleyrand, XXI. 13—his Italian campaigns, 705—his line of operations at Jena and Numburg, 706—his tactics in war, 703 *et seq.* See Chronological Table, VI. 691 *et seq.*, Wellington.
- Napoleon II., X. 239, *n.*
— III., Emperor of the French, X. 238, 239—his affair at Strasburg, 212—sent to United States, *ib.*—return from, 214—his expedition to Boulogne and imprisonment at Ham, 216; XI. 197—escape from Ham, X. 224—president of the republic, 238—Emperor of the French, *ib.*—visit to England, *ib.*—French army under, III. 640—on artillery, 684, 700, 702; XI. 137—newspapers suspended by, XVI. 200—public works in Paris executed by, XVII. 280—his operations in Italy in 1859, as commander-in-chief of the French and Sardinian armies, XIX. 643 *et seq.*
— coin, XV. 441.
- Napoli-di-Romania, XV. 830.
- Nar, river, XVI. 289.
- NARANJOS, islands, XV. 797.
- NARBO MARTIUS, XV. 797.
- NARBONNE, town in France, XV. 797.
- NARBOROUGH (Sir John), XV. 797; XX. 227.
- Narcine, genus of fishes, XII. 327.
- NARCISSUS, XV. 797.
— flower, XI. 752.
- Narcodes, genus of fossil fishes, XVII. 117.
- Narcopteris, genus of fossil fishes, XII. 342.
- Narcotic poisons, XIV. 432; XVIII. 129; XIX. 611—treatment of sufferers from, XVIII. 134.
- Narcotico-acrid poisons, XVIII. 129.
- Narcotism, XIV. 436.
- NARDO, town of Naples, XV. 798.
- NARO, town of Sicily, XV. 798.
- Narration, historical, XI. 548.

NAR—NAT

- Narrow, various meanings of, VIII. 11.
- NARSES, XV. 798; VII. 306; XII. 641; XIII. 28, 30.
— king of Persia, XVII. 435.
- NARUSZEWICZ (A. Stanislaus), Polish historian, XV. 799; XVIII. 159.
- NARVA, in Russia, XV. 799—battle of, XIX. 478.
- Narvaez, XX. 482, 484.
— (Pamphilo de), his expedition to Mexico, XIV. 704.
- Narwhal, XIV. 130, 229, 230—skulls and tusks of, XVI. 444.
- Narwhalus, genus of mammalia, XIV. 229.
- Nasal-bone, III. 22—cavities, 30, 42—muscles, 39.
- NASEBY, XV. 799—battle of, V. 407; VII. 511.
- Naseus, genus of fishes, XII. 304, 212—fossil, 344.
- NASH (John), architect, XV. 799—on iron bridges, XII. 579.
— (RICHARD), XV. 799—his statue at Bath, IV. 498.
— (THOMAS), XV. 799—his story regarding the Earl of Surrey, XI. 780—on English hexameters, 363.
- Nash-mill cast-iron bridge, XII. 588.
- NASHUA, town in the United States, XV. 800.
- NASHVILLE, town in Tennessee, XV. 800; XXI. 156.
- NASMYTH (David), XV. 800.
- NASMYTH (Alexander), painter, XV. 801.
— (James), on the surface of the Moon, IV. 89—of Saturn, 92.
— (James), his steam-hammer, XI. 201; XII. 563—his patent for purifying iron, 554—his pile-engine, 604.
— (Lieut.), on the siege of Silistria, XIX. 501.
— (Mr), his telescopes, XXI. 128.
— (PATRICK), painter, XV. 801.
- NASO, town in Sicily, XV. 801.
- NASSAU (Duchy of), XV. 801; X. 589, 591, 593—weights and measures, XXI. 812.
— (Maurice of), Prince of Orange. See Maurice.
— (William of), Prince of Orange, XI. 563 *et seq.*, 571.
- NASSICK, town in Hindustan, XV. 802.
- Nassir-Eddin Al-Tussli, X. 503.
- Nasua, genus of mammalia, XIV. 155—dentition of, XVI. 462.
- NATAL, XV. 802; II. 228; XIII. 32—Kaffirs of, 37.
— town in Brazil, XV. 806.
- Natches, American tribe, II. 681.
- NATCHEZ, in Mississippi, XV. 806.
- Nathan (Isaac), his Concordance, IV. 695.
- Natica, genus of mollusks, XV. 384—*N. melanostoma*, *ib.*—fossil, XVII. 110.
- Naticidae, family of mollusks, XV. 384.
- Naticopsis, fossil mollusks, XVII. 110.
- National character, difficulty of estimating, IV. 210—diversity of national tastes, 544.
— Assembly of France, X. 50.
— debt. See Debt, National.
— defences, XXI. 700.
— EDUCATION, XV. 806—in Austria, IV. 318—Prussia, XVIII. 672—Russia, XIX. 530—Spain, XX. 491. See Education.
— Gallery, London, XIII. 674.
— government, seat of, in the United States, XXI. 432.
— Guard of France, X. 272.
— period of the history of the United States, XXI. 436.
- Nations, XI. 537—the proper subject of history, *ib.*
— law of, XV. 829. See Law of Nations—in universities, XXI. 446 *et seq.*
- Nativity, commemoration of the, XII. 757.
- NATOLIA, or Anatolia, XV. 829; II. 758.
- Natrix, genus of serpents, XIX. 58.
- Natrolite, mineral, XV. 75.
- Natron, XV. 98—in Africa, II. 213—natron lakes in Egypt, VIII. 429.
- Natter-jack, reptile, XIX. 80.
- Naturæ Curiosæ, academy of, II. 62.

NAT—NAV

- NATURAL HISTORY, XV. 829—Bacon's views of, I. 574, 575—defence of the study against the charge of cruelty, III. 177, 178—interest of the study, XIV. 121; IX. 26—useful to physicians, XIV. 463—Pliny's work on, XVIII. 10 *et seq.*—Smellie's works on, XX. 337. See Animal Kingdom, Botany, Mineralogy, &c., and the articles enumerated in vol. III. 193.
— laws, XIII. 254.
— order of plants, V. 180.
— PHILOSOPHY, XV. 829—its connection with mathematics, I. 805; and the mechanical arts, 807. See 4th, 5th, and 6th Dissertations, vol. I.; Mechanics, Hydrodynamics, Optics, Astronomy, Magnetism, Electricity.
— theology. See Theology, God.
- NATURALIZATION, XV. 829; II. 581—in Belgium, IV. 615—in what respect different from denization, VII. 738.
- NATURE, XV. 829—the word often used by philosophers as synonymous with God, I. 279.
— law of, XIII. 253.
- Nature-printing, XVIII. 555.
- Nauclerus, genus of fishes, XII. 298—of birds, XVI. 744.
- Naucoris, genus of insects, IX. 165.
- Naucrates, genus of fishes, XII. 297.
- NAUDÉ (Gabriel), XV. 829—on the classification of books, IV. 715, 716; XIII. 374, 378—on the use of bibliographical works, 374—on classical books, IV. 709—on the Admirable Crichton, VII. 489, *n.* 5.
- NAUEN, town in Prussia, XV. 830.
- Naulas, genus of fossil fishes, XVII. 117.
- NAUMACHIA, XV. 830.
- Naumannite, mineral, XV. 117.
- NAUMBURG, town of Prussia, XV. 830—library at, XIII. 421.
- NAUNTON (Sir Robert), XV. 830.
- NAUPACTUS, city of Ætolia, XV. 830; XIII. 339.
- NAUPLIA, town of Greece, XV. 830.
- Nautical Almanack. See Almanack.
- Nautilidæ, fossil mollusks, XVII. 112.
- Nautilus, genus of mollusks, XV. 390 *et seq.*—*N. Pompilius*, 391—pearly, 394; Owen on the, 357, 391—fossil, XVII. 112.
- NAUVOO, in Illinois, XV. 830, 591.
- Naval Architectural School, VIII. 83.
— College at Portsmouth, II. 71; VIII. 83.
— knights of Windsor, XVI. 118.
— (Royal), benevolent society, XVI. 118.
— schools, XVI. 118, 119.
— tactics, XXI. 719—signals, XX. 24, see Signals (Naval)—early origin of naval terms, 125. See Navy.
- NAVAN, Irish town, XV. 831; XIV. 376, 378.
- NAVARINO, in the Morea, XV. 831—battle of, XI. 30; V. 651; X. 194.
- NAVARRA, in Spain, XV. 831; XX. 493—Moorish kingdom of Navarre, 462, 464—conquered by Ferdinand, 466.
- NAVARRETTE (D. Fernandez), Spanish missionary, XV. 832—on China, VI. 562, 568.
— (JUAN FERNANDEZ), deaf and dumb painter, XV. 832.
— (MARTIN F. DE), Spanish historian, XV. 832.
- Navicular disease in horses, XXI. 561.
- Navier (M.), French engineer, I. 876—his researches, *ib.*
- NAVIGATION, XVI. 1—improvement in, 109—use of the barometer in, IV. 457—currents affecting (see Currents)—expeditionary methods employed in, for determining the ship's place, 340—in the United States, XXI. 426—action of the wind on ships, XVIII. 65—application of steam to, I. 869—effects of the introduction of steam, XX. 20—combination of steam with sails, 21—effect of the Crusades on, VII. 533—first Navigation Act, XX. 121. See Latitude, Longitude,

NAV—NEC

Resistance of Fluids, Navigation (Inland), Steam Navigation.
NAVIGATION (INLAND), XVI. 53—modes of rendering small rivers navigable, XIX. 219—in Bengal, IV. 651—in America, II. 675—Canada, VI. 134, 152—China, 589—the Elbe, VIII. 530—France, X. 243—Ganges, 400; IV. 651—Tigris, 362—Tyne, XVI. 166—New York, 214, 220—proposed navigation across the American isthmus, II. 711—effect of wave transmission in canals, I. 889. See Canals, Dredging, Brindley.
 — **Laws**, XVI. 88, 2; VII. 189, 145; V. 636, 671; VIII. 737.
 — **Schools**, in Belgium, IV. 622.
NAVIGATOR'S ISLANDS, in the Pacific Ocean, XVI. 88; XVIII. 277.
NAVY, XVI. 89—suggestions for improving the British, V. 519—passion for enlarging it to excess, VII. 145—proposal to lay up ships in ordinary on dry land, VIII. 77—docks and dockyards, 74, 78—commissioners of, 85, 86—influence of colonies on, VII. 144—manufacture of biscuits for, IV. 378—neglect of, in the early part of fifteenth century, XX. 122—Lord St Vincent's exposure of abuses in, XII. 748—mutiny, in 1797, V. 350; VIII. 252—disposition of the British navy in 1813, XX. 135—table of ships in 1859, 138—Austrian, IV. 317—Brazilian, V. 297—Danish, VII. 749—Egyptian, VIII. 515—Chinese, VI. 583—of Europe, IX. 398—French, X. 272—Greek, XI. 20, 31—Norwegian, XVI. 329—Dutch, XI. 585—Portuguese, XVIII. 396—Prussian, 672—Russian, XIX. 534—Scotch, under James IV., 764—Sardinian, 638—navies of different kingdoms, XX. 138—Two Sicilies, 249, 253—Spain, 492—qualities of coal fitted for, 652—screw steamers in the royal navy of Great Britain, 670—Swedish, 866—of the United States, XXI. 430—Turkish, 382. See Dry Rot, Shipbuilding, Timber, Steam-vessels.
 — **BAY**, XVI. 121.
NAXOS, or **NAXIA**, XVI. 121.
NAYLOR (James), fanatic, XVI. 122.
 — (Mr.), his model farm, XV. 518.
NAZARETH, XVI. 122; XVII. 182; X. 374; XII. 758, 759.
NAZARITE, or **Nazarene**, XVI. 122.
Neara, genus of mollusks, XV. 350—fossil, XVII. 108.
NEAGH (Lough), in Ireland, XVI. 122; III. 284; XII. 505.
NEAL (Daniel), XVI. 123.
NEALCES, Greek painter, XVI. 123.
Neale. See **Smith (Edmund)**.
NEANDER, German theologian, XVI. 123—on miracles, XV. 264—on the dates of St Paul's Epistles, XVII. 350.
Neap tides, XXI. 249.
NEAPOLIS, XVI. 124. See **Naples**.
NEARCHUS, XVI. 124; III. 752; X. 463; XIII. 771.
NEATH, in Glamorgan, XVI. 125; X. 642.
Neave (Sheffield), his evidence on banking, XV. 463.
NEBRASKA, in United States, XVI. 125; XIII. 42; XXI. 419, 442.
Nebria, genus of insects, IX. 98.
Nebria, genus of fishes, XII. 285.
NEBUCHADNEZZAR, XVI. 126; VII. 646; XIV. 421—his improvement of Babylon, IV. 341—his invasion of Egypt, VIII. 465.
Nebulae, IV. 85, 86; I. 842—classification, ib.—resolvable and unresolvable, ib.—progressive condensation and breaking up of, ib.—distance of, 843—Lord Rosse's observations on, 863—on the cornea of the eyes of animals, XXI. 577.
Nebular theory, I. 842, 843.
Nebule, in heraldry, XI. 325.
Necessity, doctrine of, I. 268—zealously maintained by Leibnitz, 128—opinions of Locke, 143 and *n.*; Collins, 148, 265; Baron de Grimm and M. Diderot, 150, 270; Hobbes, 268; Edwards, 148—schemes of, connected with atheism in

NEC—NEG

modern philosophy, 266—argument for, drawn from the divine prescience, 270—considerations on, VIII. 417. See **Will**.
Neck, vertebrae of the, III. 5, 74—muscles of, 38—wounds of the, XIV. 431—sprains of, in domestic animals, XXI. 560.
NECKAR, river, XVI. 126.
NECKER (Jacques), French financier, XVI. 126; X. 38, 39, 49 *et seq.*, 122; XX. 524.
Necrobia, genus of insects, IX. 111.
Necrodes, genus of insects, IX. 114.
Necrophorus, genus of insects, IX. 113.
Necropolis, in Egypt, VIII. 499, 511—in Glasgow, X. 656.
Necrosis, XXI. 557.
Nectanebes I. and II., Egyptian kings, VIII. 466.
NECTAR, XVI. 127; II. 664.
Nectarines of flowers, V. 125.
Nectarine, culture of, XI. 709.
Nectarinia, genus of birds, XVI. 769.
Necydalis, genus of insects, IX. 145.
Nedd, in Glamorganshire, XVI. 125.
Nedham (Marshmont), early newspaper writer, XVI. 181.
NEDJED, in Arabia, XVI. 127; III. 341.
Need (Mr.), his improvements in cotton manufacture, VII. 148, 149.
NEEDHAM (John Tuberville), XVI. 127—on animalcules and mucor, III. 204.
Needle (Astatic), XIV. 90.
 — (Dipping). See **Dipping-needle**.
 — (Magnetic), XIV. 2 *et seq.*; XVII. 617—variation or declination of, I. 990; VII. 692; XVII. 617—effect of lighting on, VIII. 600—effect of aurora on, IV. 248—its form and construction, XIV. 78.
Needle-ore, XV. 120.
Needle-spar, XV. 92.
NEEDLES, XVI. 127—touch-needles, in assaying, III. 770—for net-making, XIX. 89, 90—dry needle, in engraving, XX. 746.
 — **THE (rocks)**, XVI. 128.
Needlestone, XV. 75.
NEEFS (Peter), painter, XVI. 128.
Neem oil, XVI. 496.
NEEMUCH, in Hindustan, XVI. 128.
NEER (Arnould), painter, XVI. 129.
 — (EGLON HENDRICK VANDER), XVI. 129.
NEFF (Felix), missionary, XVI. 129.
Nefn, town in Wales, XVI. 161.
NEGAPATAM, in India, XVI. 129.
Negation, in logic, XIII. 593, 594.
Negative electricity, VIII. 535, 537.
Negatives, partial, XIII. 588.
NEGRAIS, island, XVI. 129.
Negretti and Zambra's thermometer, XXI. 224.
NEGRO (Rio), South American river, XVI. 130; XVII. 777.
 — one of the tributaries of the Amazon, XVI. 130, 716; V. 292; XVII. 604.
NEGROES, XVI. 129—of Africa, II. 221, 225 *et seq.*; classified according to their languages, 221—in America, 704, 708—Mexico, XIV. 718—Algiers, II. 566—Brazil, V. 295—Colombia, VII. 134—Jamaica, XII. 679—Morocco, XV. 595—United States, II. 707; their future fate in, 709—Nicaragua, XVI. 245—superior to the American Indians, II. 693—their skin, 834, 835—skull, III. 29—facial angle of, 80—complexion, VII. 222, 223—love of dancing, 644—insurrection of, in Hayti, XI. 255—languages, XIII. 219, 225—in ethnology, IX. 351—number of converts to Christianity among, XV. 272; their probable motives, 274—unknown to Europeans till seen by the Crusaders, XX. 320—negro variety of man, II. 775; XI. 541.
Negro-slavery, XX. 321. See **Slavery and Slave-trade**.
NEGROPONT, town of Greece, XVI. 129; IX. 263.
NEGROS, island, XVI. 130.
Negundo tree, XVII. 762.

NEH—NEP

NEHEMIAH, XVI. 130; XII. 767—Book of, XVI. 131.
NEHRUNG (Curlische), district in Prussia, XVI. 131.
 — (FRISCHE), district in Prussia, XVI. 131.
Neil (William), mathematician, IX. 671.
NEILGHERRIES, or **Nilgheries**, in Hindustan, XVI. 131; XVII. 599—height of, 644.
Neilgherry pepper, XVII. 404—nettle, XXI. 782.
Neill (Col.), XVI. 308, 310.
 — (Dr Patrick), on the Siren, XIX. 85.
Neilson (J. B.), his hot-blast furnace, XII. 547, 539.
 — (R.), his portable farm railway, II. 280.
NEILSTON, village in Renfrew, XVI. 131.
NEISSE, town in Prussia, XVI. 131.
Neit, or **Neith**, Egyptian deity, VIII. 437.
Neithea, fossil mollusks, XVII. 106.
Neiva, town of New Granada, XVI. 240.
NEJUN, town in Russia, XVI. 132.
NEKO, or **Necho**, Egyptian king, XVI. 132; XI. 389; VIII. 464—voyage of, X. 461.
Neleus, a custodian of Aristotle's works, III. 536.
NELLORE, in Hindustan, XVI. 132.
NELSON (Horatio, Lord Viscount), XVI. 132—battle of Cape St Vincent, V. 560—battle of Aboukir, 564; VIII. 489; X. 109—attack on Copenhagen, V. 580; VII. 346, 742; X. 120—battle of Trafalgar, V. 598; XXI. 724, 725—his intimacy with Lady Hamilton, XI. 201—his passage through the straits of Messina, XX. 241—his conduct at Naples, 261—his eulogium on Admiral Trowbridge, XXI. 355.
 — (ROBERT), XVI. 139.
 — town and province in New Zealand, XVI. 234, 235.
Nelumbaceæ, nat. order of plants, V. 181.
Nemacanthus, genus of fossil fishes, XII. 340.
Nemalite, mineral, XV. 80.
Nematocera, genus of insects, IX. 127.
Nematodea, zoophytes, XXI. 977, 978, 980—eggs of, 981.
NEMAUSUS, city of Gallia Narbonensis, XVI. 140, 279.
NEMEAN GAMES, XVI. 140; X. 397.
Nemertes, zoophytes, XXI. 982.
NEMESIANUS (M. A. Olympius), Latin poet, XVI. 140.
NEMESIS, XVI. 140.
NEMESIUS, Greek philosopher, XVI. 140.
Nemichthys, genus of fishes, XII. 296.
Nemobrama, genus of fishes, XII. 302.
Nemognathus, genus of insects, IX. 136.
Nemoptera, genus of insects, IX. 178.
Nemopteryx, genus of fossil fishes, XII. 346.
Nemosoma, genus of insects, IX. 142.
Nemotelus, genus of insects, IX. 237.
Nemoura, genus of insects, IX. 180.
Nemours (Duke de), X. 220; IV. 607.
 — town in France, XVI. 140.
NENAGH, Irish town, XVI. 141.
NENE, or **Nen**, river, XVI. 141, 297; XII. 48.
NENNIUS, historian, XVI. 141.
Nent Force Level, aqueduct, XV. 244.
Neocomian rocks, XV. 209.
Neotese, mineral, XV. 102.
Neologists, on the character of Christ, XII. 762.
Neophron, genus of birds, XVI. 740.
NEOPHYTES, XVI. 141.
NEO-PLATONISTS, XVI. 141; II. 475; XII. 194—their mysticism, XV. 755—their pantheism, XVII. 232.
NEOPTOLEMUS, king of the Dolopians, XVI. 141.
 — king of Epirus, IX. 277.
NEOTS (St), town in Huntingdonshire, XVI. 141.
Nepa, genus of insects, IX. 165.
NEPAUL, or **Nipaul**, in Hindustan, XVI. 141—invaded by the British, XI. 506—Buddhists of, X. 724—height of mountains, XVII. 643.

NEP—NER

Nepenthaceæ, nat. order of plants, V. 205.
Nepenthes. See **Pitcher-plant**.
Nepheline, mineral, XV. 73—nepheline dolerite, 133.
Nephelis, genus of annelides, XI. 306.
Nephercherès, Egyptian king, VIII. 454.
Nepheris, VI. 301—taken by the Romans, 302.
Nephrite, mineral, XV. 82; XII. 669.
Nephritis, among animals, XXI. 570.
Nephrotoma, genus of insects, IX. 227.
Nephthe, Egyptian deity, XI. 384.
Nephthys, Egyptian deity, VIII. 438.
 — genus of annelides, XI. 299.
Nepides, tribe of insects, IX. 164.
NEPOS (Cornelius), XVI. 149.
 — (JULIUS), emperor, XVI. 149.
Nepotianus (F. P.), VII. 303.
NEPTUNE, god of the sea, XVI. 149; XIV. 360—Isthmian games in honour of, XII. 632.
 — planet, IV. 93—its existence indicated by Leverrier and Adams, ib.; I. 829, 830—discovery of, by M. Galle, IV. 93; I. 830—Professor Challis' search for, III. 817; IV. 94; I. 830 and *n.* 1—old observations of, as a fixed star, 831—principal inequality of, 832—satellite of, IV. 94; I. 860.
Neptunia, fossil mollusks, XVII. 110.
NERBUDDAH, river, XVI. 150; XVII. 647.
NEREIDS, XVI. 150, 396—fossil, XVII. 101.
Nereis, genus of annelides, XI. 298.
NEREUS, sea-god, XVI. 150, 396.
NERI (Filippo de), XVI. 150.
Nerinea, fossil mollusks, XVII. 110.
Neritidae, fossil mollusks, XVII. 111.
Neritoma, fossil mollusks, XVII. 111.
Neritopsis, fossil mollusks, XVII. 111.
NERJA, town in Spain, XVI. 150.
NERO (Claudius Caesar), emperor, XVI. 150; XX. 46—reign of, XIX. 337—Rome partly rebuilt by, 360—his banqueting house, IV. 422—baths, 505—his golden house, XIX. 360.
 — (C. CLAUDIUS), XVI. 150; XIX. 311.
 — (CLAUDIUS DRUSUS), XVI. 150.
 — Roman family, XVI. 150.
Nerophinae, sub-family of fishes, XII. 316.
Nerophis, genus of fishes, XII. 316.
NERTSHINSK, town in Siberia, XVI. 151—meteorological observations at, XIV. 687.
NERVA (Marcus Cocceius), Roman emperor, XVI. 151—reign of, XIX. 341.
NERVES, XVI. 151—Aristotle and others on, II. 750 *et seq.*—anatomical researches on, 764—their structure, 806—ganglions, 809, 811—plexuses, 812—terminations, 813—different uses, ib.—of the eye, III. 45; ear, 47; nose, 43; tongue, 49; larynx, 51—anatomy of the, 57—functions of the cerebro-spinal and sympathetic nerves, XVII. 675—of the teeth, XVI. 418—nerve cells, XVII. 650—nerve tubes, 653—electrical phenomena, 671, 672—cutting of, XXI. 576. See **Nervous System**.
Nervous diseases, in animals, XXI. 574.
 — substance, III. 171.
 — system, of man, XVII. 668—functions of, 669, 672—anatomy of, III. 51—of brutes, 103—of the invertebrata, 185; arachnides, 374; crustacea, VII. 538; insects, IX. 42, 55; annelides, XI. 291, 204; fishes, XII. 218; mollusca, XV. 322, 345 *et seq.*—zoophytes, XXI. 973—variations of, in different animals, III. 176—animals more intelligent the greater its perfection, 178—not apparent in animalcules, 195—pathology of, XVII. 698, 700—pathological laws regulating diseases of, ib. *et seq.*—congestive derangements of, 701—diastaltic or reflex derangements of, ib.—structural derangements, ib.—toxic derangements, 702—Galvani's experiments on, I. 959—Sir C. Bell on, IV. 630—works on, II. 768. See **Nerves**, **Brain**, **Spinal-Marrow**.
 — tissue, II. 806.

NER—NEV

NERVII, Belgic nation, XVI. 151.
 NESS (Loch), XVI. 151; XII. 438; XIX. 794—never freezes, VI. 777.
 — river, salmon fisheries in, IX. 611—difficulty of improving its navigation, XVI. 78.
 Nestis, genus of fishes, XII. 291.
 NESTON, GREAT, in Cheshire, XVI. 151.
 Nestor, Greek leader, character of, XVIII. 101.
 Nestorians, XVI. 152—in India, XI. 467.
 NESTORIUS, XVI. 151.
 Nests, of ants, III. 264; of fishes, XII. 259, 281, 305—of birds, XVI. 737 *et seq.*—edible, 758; VI. 394; XII. 710.
 NESVISH, town in Russia, XVI. 152.
 NETCHER (Gaspar), painter, XVI. 152.
 NETHERLANDS, XVI. 152; IX. 399. See Holland, Belgium.
 Nets, stake, IX. 617, 609—bag, 617, 610—Commissioners of Fisheries in Ireland on, 627—drift, 635—trawl, 636—net and coble fishing, 617, 611. See Reticulation.
 Nett weight III. 595.
 Netting, XXI. 780.
 Nettle, order of plants, V. 206.
 — V. 206—sting of, 75—nettles in India, XVII. 628; of Nielgherry, XXI. 782.
 Nettleford's Bolt, XIII. 541.
 Nettuno, XVII. 241.
 NEU-BRANDENBURG, XVI. 152.
 NEU-STRELITZ, XVI. 155.
 Neubold (Captain), on the Dead Sea, XVII. 188.
 NEUBURG, town in Bavaria, XVI. 152.
 NEUCHÂTEL, or Neufchâtel, XVI. 153; XX. 882—cretaceous rocks of, XV. 210—asserts its independence of Prussia, XVIII. 661.
 — Lake of, XVI. 154; XX. 889—variation of its level, *ib.*
 NEUDORF, town in Hungary, XVI. 154.
 NEUHAUS, town in Bohemia, XVI. 154.
 NEUHAUSEL, town in Hungary, XVI. 154.
 NEUHOF (Theodor, Baron von), XVI. 154.
 NEUILLY-SUR-SEINE, town in France, XVI. 155—centre employed for the bridge of, VI. 378, 381.
 Neuman (M.), on propagation by roots, XI. 694.
 Neumann (C. A.), on pseudonymous books, IV. 712.
 Neuman's burning mirror, VI. 11.
 NEUMARKT, town in Prussia, XVI. 155.
 NEUMÜNSTER, town in Denmark, XVI. 155.
 Neuralgia, XVII. 700.
 Neurlema, II. 807, 810.
 Neuro-spinal disorders, XVII. 700.
 Neurolyte, mineral, XV. 73.
 Neurology. See Nervous System.
 Neuroptera, order of insects, IX. 25, 174.
 Neurotomy, XXI. 576.
 NEUSATZ, town in Hungary, XVI. 155.
 NEUSIEDL, or Neusiedler-see (Lake), XVI. 155; XII. 10.
 NEUSOHL, town in Hungary, XVI. 155.
 NEUSS, town in Prussia, XVI. 155.
 NEUSTADT, town in Prussia, XVI. 155.
 — town in Austria, XVI. 155.
 NEUSTADT-AN-DER-HAARDT, in Bavaria, XVI. 155.
 NEUSTADT-AN-DER-ORLA, in Saxe-Weimar, XVI. 155.
 NEUSTADTL-AN-DER-WAAG, in Hungary, XVI. 155.
 NEUSTADT-EBERSWALDE, in Prussia, XVI. 155.
 Neuter, in grammar, X. 747.
 — among bees, IV. 570—ants, III. 261.
 NEUTITSCHIN, town in Austria, XVI. 156.
 NEUTRA, town in Hungary, XVI. 156.
 NEUTRALITY, XVI. 156; XIII. 288—armed neutrality of 1780, V. 494; VII. 742.
 NEUWIED, town in Prussia, XVI. 160.
 NEVA, river, XVI. 160; XVII. 487, 647; XIX. 516.
 NEVADA SIERRA, in Spain, XVI. 160.
 — in California, VI. 96.

NEV—NEW

Nevé, the snowy region of glaciers, X. 636.
 NEVERS, in France, XVI. 160.
 NEVIN, in Carnarvonshire, XVI. 161.
 NEVIS, island, XVI. 161.
 — (Ben), XII. 438; XIX. 793, 794—height of, XVII. 595, 643—electrical phenomena on, VIII. 583.
 NEVYLE, or Neville (Alexander), XVI. 161.
 NEW ALBANY, in Indiana, XVI. 161.
 — Albion, II. 448.
 — Archangel, II. 707.
 — BEDFORD, in Massachusetts, XVI. 162; XIV. 341.
 — BRITAIN, island, XVI. 162; V. 672; IV. 264.
 — BRUNSWICK, British colony in North America, XVI. 162; II. 707—weights and measures, XXI. 812.
 — BRUNSWICK, in New Jersey, XVI. 164.
 — Caledonia, IV. 266.
 — College, Oxford, XVII. 35.
 — ENGLAND, XVI. 170—cotton manufacture in, VII. 459—newspaper press of, XVI. 194—persecution of Quakers in, XVIII. 719.
 — FOREST, XVI. 170; XI. 203; XX. 209.
 — GRANADA, XVI. 173. See Granada, New.
 — Guinea. See Papua.
 — HAMPSHIRE, in United States, XVI. 173; XXI. 419, 431, 432, 433—wines of, 888.
 — HAVEN, town in Connecticut, XVI. 174—Yale College at, VII. 295.
 — Hebrides, islands, XI. 280; IV. 265.
 — Holland. See Australia.
 — IRELAND, island, XVI. 175; IV. 264.
 — JERSEY, American state, XVI. 175; XXI. 419—debt of, 428—wines, 888—newspapers of, XVI. 194—colonised, XXI. 433.
 — Lanark. See Lanark, New.
 — Leon, in Mexico, XIV. 728.
 — London. See London, New.
 — Mexico, XIV. 729.
 — ORKNEY, XVI. 176.
 — ORLEANS, XVI. 176—British attempt on, in 1814; V. 617.
 — Oxford sheep, II. 346.
 — Plymouth, town and province of New Zealand, XVI. 234.
 — Providence, island, IV. 365, 366.
 — River, XI. 359.
 — SOUTH SHETLAND, XVI. 179.
 — SOUTH WALES, province of Australia, XVI. 179; IV. 270—history of, *ib.*—gold discovery in, 275—gold diggings, *ib.* 277—gold exported from, 278—topography and appearance of the country, *ib.*—soil and climate, 279—productions, 280, 281—statistics of, 282, 284—currency, 285—carboniferous rocks of, XV. 204—as a penal colony, VII. 139—Parry's exertions for the improvement of, XVII. 308—height of mountains in, 646—railway statistics, XVIII. 787—railways and telegraphs in, XX. 896—map of, IV. Plate.
 — YORK, American state, XVI. 213; XXI. 419—debt of, 428—wines, 888—settlers in, 433—cotton manufacture of, VII. 459—life assurance in, XII. 414—rate of interest in, 432—newspapers of, XVI. 194.
 — YORK, city, XVI. 221—library at, XIII. 429; Astor library, 430—supply of water to, XIII. 131, 141—reformatories for the young at, XVIII. 586—savings' banks in, XIX. 671.
 — ZEALAND, XVI. 232; IV. 266—cannibalism in, VI. 174—Captain Cook's visit to, VII. 340—language, XIII. 202, 208—scheme for the colonisation of, VII. 150; XII. 818—a botanical region, V. 229; XVII. 629—Kaurie or Cowdie pine of, V. 209—height of mountains in, XVII. 646—stationary state of the aborigines in civilisation, I. 451—deinornis, or fossil birds of, XVII. 634—volcanoes, 590.
 — Zealand flax, V. 212, 229; XVII. 629.

NEW—NEW

New Zealand spinach, XI. 742.
 — Company, XII. 818; VII. 150; XVI. 238, 239.
 New-Light Seceders, XVIII. 500.
 NEWARK, town in New Jersey, XVI. 161.
 NEWARK-UPON-TRENT, in Nottingham, XVI. 161—battle of, V. 405—Newark Dyke bridge, XII. 596.
 Newars, of Nepaul, XVI. 144, 746.
 NEWBERN, town in North Carolina, XVI. 162.
 Newbold (Mr), his proposals for fire insurance, XII. 417.
 NEWBURG, town in New York, XVI. 165.
 NEWBURGH, town in Fifeshire, XVI. 165.
 Newburn-upon-Tyne, battle of, V. 396.
 NEWBURY, in Berkshire, XVI. 165; IV. 666—battle of, V. 405.
 — Jack of, clothier, XXI. 914. See Winchcombe.
 — PORT, in Massachusetts, XVI. 165.
 NEWCASTLE, in Limerick, XVI. 165.
 — (Duchess of). See Cavendish (Margaret).
 — (Duke of), on horsemanship, XI. 633.
 NEWCASTLE-EMLYN, in Caermarthen, XVI. 165.
 NEWCASTLE-UNDER-LYNE, in Stafford, XVI. 165.
 NEWCASTLE-UPON-TYNE, XVI. 165—method of working coal at, VII. 121—Paris first supplied with coal from, 116—brick-clay at, V. 346—high-level bridge at, XII. 603, 604.
 NEWCOME (William), archbishop, XVI. 170.
 Newcomen's steam-engine, XX. 575, 636; I. 770.
 Newel, in architecture, III. 511.
 Newell's parautoptic lock, XIII. 543.
 Newenham (Mr), on the Irish corn-laws VII. 385—on the effect of the Irish cottage system, 431.
 NEWENT, in Gloucester, XVI. 170; X. 682.
 NEWFOUNDLAND, XVI. 170—discovered by the Norwegians, II. 698; by the Icelanders, XII. 198; by Cabot, II. 699—fisheries of, VIII. 728; IX. 647; XII. 268—attempt to deprive the New Englanders of the fishery of, V. 482—fogs of, XIV. 654—trade with Labrador, XIII. 140—weights and measures, XXI. 812.
 — dogs, XX. 220.
 Newgate, XIII. 678—burnt in the Lord G. Gordon riots, V. 492—condition of prisoners in, XVIII. 568, 569.
 — novelists, XIX. 283.
 NEWHAVEN, village in Mid-Lothian, XVI. 174; IX. 795.
 — in Sussex, XVI. 174.
 Newkirkite, mineral, XV. 112.
 Newman (Edward), his works on insects, IX. 21.
 — (Mr), on the worship of the Virgin Mary, XIV. 327.
 Newman's blowpipe, IV. 793.
 NEWMARKET, XVI. 176—Heath, VI. 115—racing at, XI. 641, 642, 686 *et seq.*
 Newnham (Mr), V. 522.
 Newport, (George), his works on insects, IX. 21.
 — in Kentucky, XIII. 70.
 — in Rhode Island, XVI. 179; XIX. 147.
 — in Monmouth, XVI. 178—John Frost's riotous attack on, V. 667.
 — in Salop, XVI. 178.
 — in Tipperary, XVI. 179.
 — town in Isle of Wight, XVI. 178—savings-bank at, XIX. 664.
 — in Pembroke, XVI. 179.
 NEWPORT-PAGNELL, in Buckingham, XVI. 179.
 NEWRY, Irish town, XVI. 179; VIII. 122.
 Newsletters, XVI. 180—French MS. newsletters, 198.
 NEWSPAPERS, XVI. 180—numbers delivered in United Kingdom, XVIII. 414; XIX. 810; in Scotland, *ib.*—sent to foreign places, XVIII. 414—postage of,

NEW—NEW

and postal arrangement for, British and foreign, 417—paper for, XVII. 259—of America, X. 289, n. 3—Germany, 593—Glasgow, 653—Leeds, XIII. 316—London, 673—Edinburgh, VIII. 403—Jamaica, XII. 676—New York, XVI. 221, 229—New Zealand, 234, 235—Norway, 331—New Mexico, XIV. 730—Roman Acta Diurna, II. 117—in Philadelphia, XVII. 510—Sandwich Islands, XVIII. 270, 273—Swift's Examiner, XX. 872—in Turkey, XXI. 383—Examiner, commenced by James Wilson, 875. See Gazette.
 Newton (Adam), VII. 585, n. 6.
 — (Sir ISAAC), XVI. 205—remarks on some queries of, I. 69—effects of his discoveries, 140—his contributions to metaphysics, *ib.*; to optics, 661 *et seq.*, 747, 588; II. 39; VI. 644 *et seq.*; XIII. 451 *et seq.*; XVI. 534, 579, 580, 581, 599, 601, 603, 606, 619; to astronomy, I. 670, 676, 678; III. 803—state of the sciences when he appeared, I. 634—his genius and sagacity, 799—problem of the quadrature of the circle, 634—binomial theorem, *ib.*—his discovery of fluxions, 635; IX. 671, 672—his controversy with Leibnitz, 636; VIII. 354—his works on the new analysis, I. 646—his tract on the quadrature of curves, 647—his book of Fluxions, *ib.*—discoveries contained in his Principia, 652; character of that work, *ib.*, 139; X. 505—character of his Optics, II. 88; I. 139—his optical works, 670, n.—his discovery of gravitation, 670 *et seq.*; II. 221; IV. 220—causes of the irregularities of the moon's motion, I. 676—determined the mean quantity of retrogradation of the line of the moon's nodes, *ib.*—on the precession of the equinoxes, 678—his philosophy has received continual improvements, all confirming its truth, 679—on the tides, *ib.*, 680, 816, 817—on the orbits of comets, 681; VII. 167—on the nature of gravity, I. 684—compared with Leibnitz, 687—his thermometer, 757; IV. 457—his theory of the moon, 779—his telescope, II. 88; XVI. 533; XXI. 126, 127—his optical errors, II. 89—his theory of sound, 103—on aether, 188—his formula of the chords of multiple arcs, 555—his attempt to solve a problem of Apollonius, III. 302—on comets, IV. 78—on the gradation of atmospheric density, 464—his burning mirrors, VI. 11—Dr Clarke's translation of his Optics, 757—on the coinage, VII. 79—on halos, 411—his theory of crystallisation, 546—his obligations to Dr Barrow, VIII. 354—Leibnitz's envious detraction of, *ib.*—on the laws of motion, 327, 342—his inverse problem of centripetal forces, 361—on acceleration of forces, 356—on electricity, 524—on equations, IX. 292, 294—on the earth's figure, I. 677; IX. 548—on projectiles, XI. 108—on hydrodynamics, XII. 71, 104, 105, 159—his theory of colours, XIII. 453—his correspondence with Locke, I. 118, n. 3—on magnetism, XIV. 3—his reflecting microscope, 784—his opinions on the nature of light, I. 896—on pneumatics, XVIII. 55, 65, 67, 69, 70, 71—on the perfections and sovereignty of God, XIX. 222—on the resistance of fluids, 195—his demonstration of the 28th lemma of the first book of his Principia, XX. 522—on cohesion, 751—on the alternate attraction and repulsion of light by bodies, 752. See Newtonian Philosophy.
 — (E.), typefounder, XXI. 403.
 — (GILBERT STEWART), artist, XVI. 211.
 — (JOHN), English divine, XVI. 211—his hymns, XII. 189.
 — (THOMAS), bishop, XVI. 212.
 — (Sir W.), his mode of transferring collodion pictures to paper, XVII. 548.
 — town in Cheshire, XVI. 212.

NEW—NIC

Newton's metal, IV. 735.
 NEWTON-ABBOT, in Devonshire, XVI. 212.
 NEWTON-ARDS, in county Down, XVI. 212.
 NEWTON-IN-MAKERFIELD, in Lancashire, XVI. 212.
 NEWTON-STEWART, in Wigtownshire, XVI. 212; XXI. 863.
 NEWTON-UPON-AYR, XVI. 212; IV. 332.
 NEWTONIAN PHILOSOPHY, XVI. 210—slow reception of, I. 682—first publicly taught in Scotland, 683 *n.*, 249 and *n.* 1—its progress in France, 683, 692; in England, 692, 693—Dr Clarke's mode of introducing it at Cambridge, VI. 757. See Astronomy, Attraction, Optics, Dynamics, Gravitation, Newton, &c.
 NEWTOWN, in Montgomeryshire, XVI. 212.
 NEWTOWN-BARRY, in Wexford, XVI. 212.
 NEWTOWN-HAMILTON, in Armagh, XVI. 212.
 NEWTOWN-LIMAVADY, in Londonderry, XVI. 212.
 NEWTOWN-STEWART, in Tyrone, XVI. 213.
 Newts, XIX. 82.
 Newtyle Railway, VIII. 257.
 NEY (Michel), marshal, XVI. 239; X. 137 *et seq.*, 159, 160—at Waterloo, V. 619, 620—trial and execution of, X. 176—Duke of Wellington blamed for his death, XXI. 829.
 NEYVA, town of New Granada, XVI. 240.
 Nezib, battle of, X. 215.
 NGAMI, lake, XVI. 240; II. 215; X. 477.
 NGANHOEI, Chinese province, XVI. 241.
 NIAGARA, river, XVI. 241—Falls of, VI. 135; XVII. 605—Sir C. Lyell on the recession of, VI. 135—suspension-bridge over, XII. 590—group of rocks, XV. 199; XVI. 215.
 NICÆA, in Bithynia, XVI. 241, 248. See Nice.
 — town of Liguria, XVI. 242, 247.
 Nicaise of Malignes, IV. 779.
 NICANDER, poet, XVI. 242.
 — (H.), on mortality in Sweden, XV. 605, 634.
 — (Karl August), Swedish poet, XIX. 700.
 NICARAGUA, republic of, XVI. 242—proposed ship canal through, II. 711; XV. 663; XVI. 245.
 — lake of, XVI. 243, 246; II. 711.
 NICASTRO, town in Naples, XVI. 247.
 Niccolini (Giovanni), his tragedies, XVIII. 112.
 NICCOLO PISANO, or Di Pisa, XVI. 247. See Pisano.
 NICE, XVI. 247—its perfumes, XVII. 408.
 — or Nicaea, Council of, XVI. 248; VIII. 473; XIX. 353—time of celebrating Easter fixed by, VI. 80.
 NICEPHORUS I., emperor of Constantinople, XVI. 249; VII. 313.
 — II. (PHOCAS), XVI. 249.
 — III. (BATONIANES), XVI. 249; VII. 316.
 — (CALLISTUS), XVI. 249.
 — Patriarch of Constantinople, XVI. 249.
 — Roman emperor, VII. 313.
 — (Uranus), VII. 313.
 Niceron (Père), on Rabelais, XVIII. 740, 741.
 Nicetas of Syracuse, astronomer, III. 788.
 Niche, in architecture, III. 488, 511.
 Nicholaiëff, Russian town, XIX. 537.
 NICHOLAS I., pope, XVI. 249.
 — II., pope, XVI. 250.
 — III., pope, XVI. 250.
 — IV., pope, XVI. 250.
 — V., XVI. 250.
 — I., of Russia. See Nicolas I.
 — Sicilian diver, VIII. 56.
 — (St.), island, XVI. 250.
 Nicholls (Dr), on Bishop Sherlock, XX. 112.
 NICHOLS (John), XVI. 250.
 Nicholson (General), XVI. 304, 305; XVIII. 694.
 — (Margaret), her attempt to assassinate George III., V. 521.
 — (P.), his work on carpentry, VI. 253—on the employment of iron in roofs,

NIC—NIE

266—on carpentry, XII. 805—his rule for calculating the strength of a beam, XX. 780.
 NICHOLSON (William), XVI. 250; I. 965—his areometer, III. 391—spinning condenser of electricity, VIII. 614—revolving doubler, 615—hydrometer, XII. 86—on the colours of thick plates, XVI. 621—on the voltaic pile, XXI. 628.
 — (William), his printing machine, XVIII. 558.
 NICIAS, Athenian statesman, XVI. 250; IV. 206—his expedition against Syracuse, XX. 899.
 — Greek painter, XVI. 251; XVII. 57.
 Nickel, metal, XV. 60, 61, 66, 246; VI. 492; XVII. 622—its combination with iron, VII. 600—specific gravity, XII. 88—magnetism of, XIV. 16, 26—mine of, near Inverary, III. 526; XV. 246—in Chile, VI. 548—copper nickel, XV. 116—white, *ib.*
 Nickeline, or Nickel-ochre, XV. 104.
 — or copper-nickel, XV. 116.
 NICOBARS, islands, XVI. 251—bread-fruit of the, V. 301.
 Nicol (William), I. 913, *n.*—his prism, XIV. 789; XVI. 649; I. 913.
 — (Prof.), on the geology of Scotland, XIX. 811, 790—his geological map of, 792, *n.*—on geology of Roxburghshire, 453.
 NICOLAI (C. Friedrich), XVI. 251—on spectral illusions, III. 315, 317.
 Nicolaïef, IV. 743. See Nikolaïef.
 NICOLAÏTANS, Gnostic sect, XVI. 252.
 NICOLAS (Sir N. Harris), antiquary, XVI. 252—his edition of Nelson's Dispatches, 136 *n.*, 139 *n.*
 — I. (PAVLOVICH), emperor of Russia, XVI. 252—his accession to the throne, XIX. 496—his treatment of the Poles, 498; and Circasians, *ib.*—his policy, *ib.*—his opinions regarding Turkey, *ib.* 499—death, 507—Petersburg improved by, XVII. 487—his cabinet in the winter palace, 491—his designs on Turkey, XXI. 375.
 — or Nicholas (St), town in Belgium, XVI. 252.
 NICOLAUS (Damascenus), XVI. 252; VII. 638.
 — (MYREPSUS), XVI. 252.
 — (PREPOSITUS), XVI. 252.
 NICOLE (Pierre), theologian, XVI. 252.
 — on the quadrature of the circle, XX. 522.
 NICOLL (Robert), Scottish poet, XVI. 254.
 NICOLO (San), town in the island of Tinos, XVI. 254.
 NICHOLSON (William), archbishop, XVI. 254—his character of Sir Thomas Craig, VII. 479, *n.* 2.
 NICOMACHUS, Greek painter, XVI. 254.
 NICOMEDES I., Bithynian king, XVI. 254.
 — II. (EPIPHANES), XVI. 254; VI. 222.
 — III., XVI. 254.
 — geometer, X. 501—conchoid first proposed by, III. 143; X. 544—on the quadrature of the circle, XX. 521.
 — (Philopater), VI. 222.
 NICOMEDIA, XVI. 255, 254; XII. 629.
 NICOPOLIS, in Ancient Greece, XVI. 255.
 — in Turkey, XVI. 255; VII. 653.
 NICOSIA, capital of Cyprus, XVI. 255.
 — town in Sicily, XVI. 255.
 Nicotiana Tabacum, flower of, V. 124, 201. See Tobacco.
 Nicotine, XIV. 438; XXI. 293.
 Nictitating membrane, III. 98.
 Nidech, town of Asia Minor, XVI. 264.
 Nidwalden, in Switzerland, XXI. 494.
 Niebelungen-lay, German poem, XI. 603.
 NIEBUHR (B. George), historian, XVI. 255; XI. 543, 549—on the origin of the Etruscans, IX. 356—on the ruins of Babylon, IV. 344—on the Agrarian laws, II. 246—his discoveries among the palimpsests at Verona, XVII. 213, 214—on the Pelasgi, 371—on Scaliger's scholarship, 523—his History of Rome, 525—Schmitz's edition of his

NIE—NIM

Lectures on Ancient History, IV. 344—on the passage of the Israelites through the Red Sea, XVIII. 819—on the Roman senate, XX. 44—on Seneca, 47—on Suetonius as a historian, 788—on Tacitus, XXI. 4.
 NIEBUHR (Carsten), traveller, XVI. 262—on Arabia, III. 352.
 NIEMCEWICZ (Julian Ursin), Polish poet, XVI. 262; XVIII. 159.
 NIEMEN, river, XVI. 263; XVII. 647; XVIII. 662; XIX. 516.
 NIEMES, town of Bohemia, XVI. 263.
 NIENBURG, town of Hanover, XVI. 263.
 Niepce (Isidore), photographer, I. 923, *n.* 1.
 — (Necephore), his discoveries in photography, I. 922; XVI. 551; XVII. 545.
 — (de St Victor), his improvements in photography, XVII. 546; on the use of nitrate of uranium in, 551—his recent discoveries in photography, 552.
 Nieshin, town in Russia, XVI. 132.
 Nieuport, battle of, XI. 572.
 NIEUWENTYT (Bernard), Dutch philosopher, XVI. 263—his opposition to the geometry of Newton, I. 649; IX. 676.
 NIEUWLAND (Peter), XVI. 264.
 NIÈVRE, in France, XVI. 264.
 NIGDEH, town in Asia Minor, XVI. 264.
 NIGER, XVI. 265; XVII. 608, 647—course and termination of, II. 210, 214; X. 477; XIII. 181—hypothesis of its connection with the Nile, X. 476; XVI. 270—expeditions of discovery to, X. 477. See Park (Mungo).
 — (C. PESCENNIUS), Roman general, XVI. 267; XIX. 346.
 Niger-seed oil, XVI. 495.
 Nightingale, XVI. 756; XVII. 633—Swedish, XIII. 236.
 — (Miss Florence), XIX. 506.
 Nightmare, or incubus, XVII. 680.
 Nightshade (deadly), V. 202—its effect on the pupil of the eye, III. 44; XVII. 702—poisonous properties of, XIV. 438; XVIII. 130.
 — order of plants, V. 201.
 Nightsoil, as manure, II. 301, 408.
 Nigrine, mineral, XV. 110.
 NIGRITIA, or Soudan, XVI. 267; II. 228.
 Nihau, island, XVIII. 270.
 NIJAR-Y-HUEBRO, town in Spain, XVI. 267.
 NIJNI-NOVGOROD, XVI. 267; XIX. 520, 521—fair of, IX. 469; XIX. 542.
 NIKOLAÏEV, Russian town, XVI. 268; IV. 743.
 NIKOLSBURG, town in Moravia, XVI. 268.
 NILE, river, XVI. 268, 348; II. 213; XVII. 607, 647—supposed connection of its overflow with the plague, 748—crocodile of the, XIX. 23—names of, VIII. 424—hieroglyphical character of, XI. 393—its source, II. 55, 213; VIII. 425—rise and inundations, 428; XVII. 600—observances connected with, VIII. 448—its water and deposits, 425—ascend of, 502—canal of the, II. 473—Bruce's journey to discover the source of, V. 689—worshipped by the Egyptians, I. 457—fertilising effect of its overflow, XII. 621—tribes of people dwelling near, IX. 351—quantity of water conveyed to the sea by, XVII. 573—delta of, 586—slope and velocity of, 601—fertilising mud, 608.
 — battle of the, V. 564; VIII. 489; X. 109; XVI. 135.
 — Blue. See Bahr-el-Azrek.
 — White. See Bahr-el-Abyad.
 Nilio, genus of insects, IX. 131.
 Nilometer, VIII. 426, 448.
 Nilsson (Prof.), on the salmon of Scandinavia, XII. 241—on Swedish birds, XVI. 731.
 Nilus, Egyptian deity, VIII. 439; XI. 385, 393.
 Nimbus, rain cloud, XIV. 656.
 NIMEGUEN, in Holland, XVI. 271.
 NIMES, town in France, XVI. 272, 279.
 Nimrod, son of Cush, III. 778, 741; XX. 318.
 — on horses, XI. 647 *et seq.*—on riding, 674—on the terms used in deer-hunting,

NIM—NIT

XII. 39—his description of a full-headed deer, 40.
 Nimroud Birs, IV. 343—Nimroud, XVI. 273, 275.
 Nimroz. See Seistan.
 NINEVEH, XVI. 272; XI. 542—history of, III. 741—Layard on the buildings of, 499, 500, 501—Fergusson on the architecture of, 501, 502—taken by Cyaxares, XIV. 421—sculptured monuments of, XIX. 846—masonry of, XX. 710.
 NING-PO, XVI. 277—opened to British commerce in 1842, VI. 597—exports and imports, 591.
 NINIAN, or St Ninian, XVI. 278.
 NINIAN'S (St), village in Stirlingshire, XVI. 278.
 NINOVE, town of Belgium, XVI. 278.
 Ninus, king of Assyria, III. 741, 778; XI. 542.
 NIOBE, XVI. 278—statue of, III. 708.
 Niobite, mineral, XV. 109.
 NIORT, town in France, XVI. 278; XX. 67.
 NIPHON, or Nipon, island, XVI. 278; XII. 688.
 — genus of fishes, XII. 275.
 Nipisigit, river in New Brunswick, XVI. 163.
 NIPISSING (Lake), XVI. 278.
 Nipples, III. 72.
 Nips, in coal beds, VII. 116.
 Nisaea, IV. 208.
 NISAN, Hebrew month, XVI. 279; II. 40.
 NISHAPOOR, town in Persia, XVI. 279.
 Nishni-Novgorod. See Nijni-Novgorod.
 NISI PRIUS, in law, XVI. 279.
 NISMES, or Nimes, town in France, XVI. 279; X. 404—Roman aqueduct at, III. 336—amphitheatre at, II. 731—perfumes manufactured at, XVII. 408.
 Niso, fossil mollusks, XVII. 110.
 NISSA, or Nisch, town in Turkey, XVI. 280.
 Nisus, genus of birds, XVI. 743.
 Nitela, genus of insects, IX. 196.
 NITH, river, XVI. 280; VIII. 239—valley of the, XIX. 790—close-time in, IX. 613.
 NITHARD, French historian, XVI. 280.
 NITI, pass over the Himalayas, XVI. 280.
 Nitidula, genus of insects, IX. 114.
 Nitidularia, family of insects, IX. 114.
 Nitôkris, Egyptian queen, VIII. 456.
 Nitrate of soda, as manure, II. 305, 413—in Peru, XVII. 472—of potash, II. 413.
 — of silver, VI. 499—chemical effects of the spectrum on paper washed with, XVI. 595—its use in photography, XVII. 545 *et seq.*
 — of Uranium process in photography, XVII. 551.
 Nitratine, mineral, XV. 98.
 Nitre. See Saltpetre.
 Nitric acid, VI. 463; VIII. 530; XV. 61, 64—sometimes found in the air, II. 376; V. 95; VI. 465—discovery of its composition, 352; VIII. 595—its poisonous quality, XIV. 435—specific gravity of, XII. 89—in tobacco, XXI. 293.
 — oxide, a poison, XIV. 435.
 Nitrocalcite, mineral, XV. 99.
 Nitrogen, or azote, VI. 461—a component part of the atmosphere, IV. 180—its specific gravity, 181; XII. 89; VI. 488—in plants, II. 375, 381; V. 94, 95—in different manures, II. 412—quantity removed from the land by different grain crops, 417—alimentary principles containing it, VIII. 18—combined with oxygen, VI. 462—deutoxide of, *ib.*—protoxide, *ib.*—illuminating power of coal-gas deteriorated by mixture with, X. 432—as an element in the crust of the globe, XVII. 619.
 Nitrogenous food, XIX. 610.
 Nitromagnesite, mineral, XV. 99.
 Nitrous acid, VI. 463—vapour of, poisonous, XIV. 435—nitrous acid gas, its singular action on the spectrum, XVI. 597; I. 915—specific gravity of, XII. 89.
 — oxide, XIV. 435—discovery of its properties, I. 967; IV. 566; VII. 668—its intoxicating quality, VIII. 197.
 Nitsch (F. A.), his account of Kant's views regarding free will, I. 196.

NIT—NOM

Nitzsch, on the spirituality of God, XXI 190.
 NIVELLES, town in Belgium, XVI. 280—normal school at, IV. 621.
 NIVERNAIS, French province, XVI. 280; X. 277.
 NIXDORF, town of Bohemia, XVI. 280.
 Nizam, Ali, XI. 490.
 NIZAM'S DOMINIONS, XVI. 280; XI. 501. See Hyderabad.
 — fidelity to the British, in the sepoy revolt, XVI. 311.
 Nizami, Persian poet, XVII. 429.
 Nizolius (Marius), his revolt against the authority of Aristotle, I. 25.
 NIZZA MONFERRATO, Sardinian town, XVI. 280.
 — province, XIX. 640.
 Noad (Mr), on magnetic electricity, XXI. 648.
 NOAH, XVI. 280; III. 267—his ark, 608—Bryant on, VII. 711—dispersion of his posterity, VIII. 44, 45—his communications with God, I. 466. See Deluge.
 Nobert (M.), on microscopic lines, XIV. 801, 804, 805.
 Nobili, the associate of Melloni, I. 955—on heat, ib.; XI. 265—his thermo-multiplier, I. 955; XXI. 642—on the current of the frog, I. 961—his improvement of the galvanometer, 976—on movements in electrolytic liquids, XXI. 629—on colours formed on metallic plates by voltaic electricity, 632—his experiments on thermo-electric circuits, 650—his thermo-electric pile, 652.
 NOBILITY, XVI. 280—Aristotle on, III. 567, n. 3—numbers of, in England, VIII. 768—of France, X. 46—Arabia, III. 350—abolition of a hereditary, in Norway, XVI. 318—effect of the Crusades on, VII. 532—Italian, XII. 662—Prussian, XVIII. 664—Roman, XIX. 316—feudal nobility of Europe, in fifteenth century, 761—Swedish, XX. 864. See Duke, Marquis, Earl, Viscount, Baron.
 Noble (Mr), his definition of insanity, XIV. 526.
 — (M. le), his use of the magnet in medical cases, XX. 414.
 — coin, XVI. 388.
 Nobrega, a Jesuit, V. 281.
 NOCERA DEI PAGANI, town of Naples, XVI. 282.
 NOCI, town of Naples, XVI. 282.
 Nock (Henry), his patent breech for guns, XI. 97.
 Noctilio, genus of mammalia, XIV. 148.
 Noctiluca, zoophytes, XXI. 1000.
 Noctua, genus of birds, XVI. 746.
 — genus of insects, IX. 215.
 Noctualites, section of insects, IX. 214.
 Nocturna, family of insects, IX. 210.
 Nocturnal birds of prey, XVI. 745.
 Noddies, birds, XVI. 813.
 NODES, XVI. 282; IV. 12—of the moon's orbit, 33, 37—of the planetary orbits, 57—motions of the, I. 812.
 — in botany, V. 78.
 NODIER (Charles), XVI. 282—his works on insects, IX. 17—his novels, XIX. 289.
 Noel's attack on Pascal, IV. 450.
 NOGENT-LE-ROUVER, town in France, XVI. 282.
 Nogent-sur-Seine, centre for the bridge of, VI. 377.
 NOIRMOUTIERS, island, XVI. 283.
 Noizet (General), his system of fortification, IX. 821, 834.
 NOLA, town of Naples, XVI. 283—battle of, VI. 297.
 Nolanaceæ, nat. order of plants, XVI. 201.
 NOLLE PROSEQUI, in law, XVI. 283.
 NOLLEKENS (Joseph), XVI. 283—character of his sculpture, XIX. 867—Smith's work on, XX. 348.
 Nollet (Jean Antoine), I. 734, n. 1—his controversy with Franklin, V. 368—on electricity, VIII. 527, 602.
 Nomada, genus of insects IX. 200.
 NOMBRE-DE-DIOS, town of Mexico, XVI. 284; XIV. 727.

NOM—NOR

Nomenclature of anatomy, IV. 443—chemistry, VI. 453—chronological, in geology, XV. 195.
 Nomes, divisions of Egypt, VIII. 421.
 Nomeus, genus of fishes, XII. 298.
 Nomia, genus of insects, IX. 198.
 NOMINALISTS AND REALISTS, XVI. 284; I. 328.
 Nominative case, X. 749.
 Nomophylaces of Athens, IV. 214.
 Nomothetes, of Athens, IV. 215.
 Nomsz (Jean), Dutch author, XVI. 285.
 Non-conductors, in electricity, VIII. 540.
 Non-intrusion controversy, XVIII. 495; VI. 405—Sir J. Gibson-Craig's share in, VII. 476.
 NONAGESIMAL DEGREE, XVI. 285; IV. 117.
 NONAGON, XVI. 285.
 NONCONFORMISTS, XVI. 285. See Puritans, Baptists, Independents, Methodists, Presbyterians, Quakers.
 NONES, XVI. 286; VI. 76.
 Nonius (Fernando and Pedro). See Nunez.
 NONJURORS, XVI. 286; VI. 713.
 NONNUS, Greek poet, XVI. 286.
 Nonpareil type, XXI. 421, 422, 423.
 Nontronite, mineral, XV. 90.
 NOOAHEVA, Nouheva, or Nouka-hiva, one of the Marquesas islands, XVI. 287; XIV. 313.
 NOODT (Gerard), jurist, XVI. 287.
 Noor-ed-Deen. See Nouredin.
 NOOTKA SOUND, XVI. 287—dispute between Britain and Spain about, V. 536.
 Nopal Plant, V. 194.
 Nopaltzin, Mexican king, XIV. 699.
 NORBERG, or Nordberg (George), XVI. 287.
 Norbertines, XVIII. 479.
 NORCIA, town in the Papal States, XVI. 287.
 NORB, department of France, XVI. 287.
 — CÔTES DU, XVI. 288; VII. 426.
 NORDEN, town in Hanover, XVI. 288.
 — (Sir J.), on agriculture, II. 257.
 Nordenflycht (H. Charlotte), Swedish poetess, XIX. 698.
 NORDHAUSEN, town in Prussia, XVI. 288.
 NORDHEIM, town in Hanover, XVI. 288.
 NORDKÖPING, or Norrköping, in Sweden, XVI. 288; XX. 862, 864.
 NORDLINGEN, town of Bavaria, XVI. 288.
 Nordmann on zoophytes, XXI. 973 *et seq.*
 NORE, XVI. 288—mutiny of, V. 560; VIII. 252.
 — Irish river, XIII. 84, 87; XVIII. 728.
 Norfolk Crag, fossils of, XV. 215.
 — (Duke of), his case of divorce, VIII. 70.
 — (Duke of), XIX. 787.
 — English county, XVI. 288—population and value of property, VIII. 754—system of cropping, II. 292—woollen trade of the town of, XXI. 914.
 — ISLAND, XVI. 291—pine of, III. 396; V. 209—as a penal settlement, XVIII. 578; XXI. 30.
 — in Virginia, XVI. 291.
 Noria, hydraulic machine, XII. 69, 183.
 Noric Alps, II. 624.
 NORICUM, Roman province, XVI. 291.
 NORIS (Henry), XVI. 292.
 Norite rock, XV. 135.
 Normal Schools. See Schools.
 Norman architecture, III. 449—painted glass associated with, X. 667—roofs, XIX. 390.
 — conquest of England, VIII. 665—its effects on the Anglo-Saxon nobility, 794.
 — (Robert), first observed the dip of the magnetic needle, VIII. 42; XIV. 2; XVI. 4.
 Norman-Gothic architecture, III. 480.
 NORMANDY, XVI. 292; X. 277—invaded by Henry I., VIII. 670—Pliocene rocks in, XV. 215.
 Normans. See Danes, Norwegians.
 Norris (Dr Hill), his photographic process, XVII. 548.
 — (E.), philologist, XVII. 534.
 — (JOHN), XVI. 292.
 — (Sir John), XX. 132.

NOR—NOR

NORRISTOWN, in Pennsylvania, XVI. 293.
 Norrland, division of Sweden, XX. 864; XI. 354.
 Norroy king-of-arms, XI. 320.
 Norse language, VII. 750.
 Norte (Rio del). See Rio del Norte.
 NORTH (Sir Dudley), XVI. 294—on political economy, XVIII. 217.
 — (FRANCIS), Baron Guildford, keeper of the Great Seal, XVI. 294.
 — (FREDERICK), earl of Guildford, XVI. 294—his administration, V. 477 *et seq.*—resignation, 500—coalition between him and Mr Fox, 506; X. 852—secretary of state, V. 506.
 — (Roger), XVI. 294.
 — Briton, newspaper, V. 467, 468.
 — CAPE, XVI. 298; XIII. 233.
 — Pole, Parry's attempt to reach, XVII. 307—open water probably around, 583. See Polar Regions.
 — SEA, or German Ocean, XVI. 298.
 North-east Passage, XVIII. 163.
 NORTH-WEST PASSAGE, XVI. 300; XVIII. 166 *et seq.*—list of modern north-west voyages, 171, n.—Cook's voyages in search of, VII. 340; Franklin's, X. 295, 298—ascertained to exist, but not navigated, by Sir R. M'Clure, 474, 299—voyages in search of, 473—Davis's voyages in search of, VII. 666.
 — TERRITORY, XVI. 316; XI. 791.
 — Company, X. 346.
 NORTH-WESTERN PROVINCES OF BENGAL, XVI. 301—statistics of, XI. 524.
 NORTHALLERTON, XVI. 295.
 NORTHAMPTON, XVI. 295—tables of mortality, XV. 641; XII. 399.
 — in Massachusetts, XVI. 296; XIV. 341.
 NORTHAMPTONSHIRE, XVI. 297—population and value of property, VIII. 754.
 NORTHCOLE (James), painter, XVI. 298—character of his works, XVII. 80.
 Northern (Great) Railway, XVIII. 794, 795—stations, 774—coal-waggons, 782—Jenkins' coal-burning locomotives on, XX. 358.
 — CIRCARS, XVI. 298; VI. 728.
 Northfleet, in Kent, proposed dockyard at, VIII. 78.
 Northmen, VIII. 660, 661.
 Northmore (Mr), his plan of a universal character, VI. 417.
 Northom on the Belgian army, IV. 599.
 NORTHUMBERLAND, XVI. 299—addition to its area, VIII. 719—population and value of property, 754.
 — (Duke of), his exertions in improving life-boats, XIII. 446. See Dudley.
 NORTHWICH, in Cheshire, XVI. 316—salt-mines of, VI. 528; XV. 246; XIX. 582, 585.
 Norton (Mr), on the various readings of the New Testament, IV. 698.
 — CHIPPING, XVI. 316; VI. 600.
 Norvel's rope machine, XIX. 412.
 NORWAY, XVI. 316; IX. 402—belief in supernatural beings still prevailing in, I. 464—its disjunction from Denmark, V. 614, 615—union with Denmark and Sweden, VII. 739—ceded by Denmark to Sweden, 743—glaciers of, X. 634—Jews in, XII. 783—language, XIII. 211—libraries, 427—leprosy in, 341—silver mines of, XV. 236—metallic produce of, 248—elevation of, 167—mortality, 607, 631—newspapers, XVI. 202—works on the birds of, 730—coins of, 389—proportion of insane, XIV. 536—snow-level, XVII. 602—increase of population in, XVIII. 350—navy, XX. 138—wars with Sweden, 845 *et seq.*—annexed to Sweden, 860—weights and measures, XXI. 812.
 Norwegian harrow, II. 273—herrings, IX. 641.
 Norwegians, their discovery of America, II. 698—invasions of France, X. 9 *et seq.*; of the Hebrides, XI. 279; of England, VIII. 663; Scotland, XIX. 754—their early intercourse with Greenland, XI. 38—were the first settlers of Ice-

NOR—NOV

land, XII. 197—Norse language, VII. 750—their naval enterprise, XX. 119. See Danes, Normans.
 NORWICH, XVI. 332—early newspapers of, 186—markets, 290—foreign weavers in, XXI. 780—woollen trade of, 914, 918.
 — in Connecticut, XVI. 335.
 NORWOOD, town in Surrey, XVI. 335.
 — (RICHARD), XVI. 335—measurement of an arc of meridian by, I. 618; IX. 548—on navigation, XVI. 5.
 Nose, III. 42—bone of the, 22—cavities, 42—muscles, 39—in brutes, 94—surgical restoration and repair of, XX. 835; diseases of the, in cattle, XXI. 571.
 Nosean, mineral, XV. 74.
 Noseman on birds, XVI. 720.
 Nosology, vegetable, V. 170.
 Noss, one of the Shetland islands, XX. 113.
 NOSSI-BE, or Nos-Beh, island, XVI. 335.
 NOSTRADAMUS (Michel de), XVI. 335.
 Nostrils, III. 42, 94.
 Notables (Assembly of), X. 41 *et seq.*
 Notacanthus, genus of fishes, XII. 292.
 Notacanthidae, or Notacanthi, family of fishes, XII. 292.
 Notæus, genus of fossil fishes, XII. 347.
 Notagogus, genus of fossil fishes, XII. 335.
 NOTARY, XVI. 335—in Scotland, 336.
 NOTATION, XVI. 336—Arabic, an acquisition from the East, I. 556—in algebra, II. 489—in arithmetic, III. 582—of decimal fractions, 599—chemical, VI. 451—trigonometrical, XXI. 338.
 Notching, in carpentry, V. 746.
 NOTES, in music, XVI. 336.
 — See Bank Notes, Bill of Exchange.
 Nothosaurus, fossil reptiles, XVII. 143.
 Nothosomus, genus of fossil fishes, XII. 335.
 Nothus, genus of insects, IX. 133.
 Notidanidae, family of fishes, XII. 324.
 Notidanus, genus of fossil fishes, XII. 341; XVII. 118.
 Notiophila, genus of insects, IX. 255.
 NOTO, Sicilian city, XVI. 336; XX. 255.
 Notodonta, genus of insects, IX. 214.
 Notonecta, genus of insects, IX. 166.
 Notonectides, family of insects, IX. 166.
 Notopoda, genus of crustacea, VII. 541.
 Notopterus, genus of fishes, XII. 250, 249.
 Notothernia, genus of fishes, XII. 307.
 Nototherium, fossil mammal, XVII. 175, 638.
 Notoxus, genus of insects, IX. 134.
 Nott (General), V. 668—Ghizni dismantled by, X. 603.
 — (Dr), on Barbour's Bruce, IV. 436; VIII. 796—on the Earl of Surrey's translation of the *Æneid*, VIII. 119.
 NOTTINGHAM, XVI. 336—lace manufacture of, VII. 451; XIII. 143—meteorological observations at, XIV. 688—rearing of silk-worms at, XX. 292.
 NOTTINGHAMSHIRE, XVI. 333; VIII. 754—lace manufacture in, XIII. 145.
 Noue (La), on chivalry, VI. 624, 625—on romance, XIX. 264, 265, 266.
 Nouet (M.), on the dimensions of the great pyramid, III. 437.
 Nouns, X. 746, 789—in Egyptian grammar, XI. 423, 427—inflection of, XIII. 192.
 NOUREDDIN, Noor-ed-Deen, or Nur-ed-Din, Moslem rulers of Syria, XVI. 341; XXI. 911.
 — (Mahmoud), XVI. 341—his invasion of Egypt, VIII. 480.
 NOVA SCOTIA, XVI. 342—bronets of, IV. 469—war between Britain and France concerning, V. 462—iron ores of, XII. 542—trade with Labrador, XIII. 140—weights and measures, XXI. 812.
 Novacula, genus of fishes, XII. 267.
 NOVALIS (F. L. von Hardenberg), XVI. 341.
 Novanglus, Letters of, XVI. 193.
 Novantæ, Caledonian tribe, VI. 74; XIX. 742.
 NOVARA, in Piedmont, XVI. 342; XIX. 640.

NOV—NUN

NOVA ZEMBLA, XVI. 345; XIX. 552—degree of cold in, III. 737.
 NOVATIANUS and Novatians, XVI. 345; XII. 368.
 NOVEL, XVI. 346; XIX. 253, 269—Goethe's, X. 699—of Eugene Sue, XX. 787—effects of novel reading, IX. 542—writers of Sweden, XIX. 701. See Romance.
 NOVELDA, town in Spain, XVI. 346.
 NOVELLARA, town in Italy, XVI. 346.
 Novels of Justinian, VI. 746.
 NOVEMBER, XVI. 346—Gardening Calendar for, XI. 760.
 Noverre on the ballet, IV. 398.
 NOVGOROD, or Novgorod, XVI. 346; XIX. 471, 473, 520, 521.
 — city, XVI. 346—its former commercial importance, XI. 214; XII. 817.
 NOVGOROD-SIEVERSK, XVI. 347.
 NOVI, town in Italy, XVI. 347—battle of, X. 113.
 NOVI-BAZAR, town in Turkey, XVI. 347.
 Novice, XVI. 347.
 Novitska, destroyed by the allied fleet in 1854, XIX. 507.
 NOVO-REDONDO, town in Africa, XVI. 347.
 NOVO-TSCHERKASK, town in Russia, XVI. 347.
 NOWAGURH, a raj of India, XVI. 347.
 NOWANUGGUR, town in India, XVI. 347.
 Nowy-Gyeyn, town in Moravia, XVI. 156.
 Nox, in mythology, XVI. 347.
 NOY (Sir William), XVI. 347.
 NOYON, town in France, XVI. 347.
 NUBIA, XVI. 347; II. 224—temple of Amada in, III. 441—mines of, VII. 188—gold from, XV. 230. See Nubians.
 — steam-vessel, performances of, XX. 165.
 Nubians, II. 219; IX. 351—their languages, XIII. 227.
 Nuble, in Chile, VI. 547.
 Nuck (Mr), on the lacteals, II. 762.
 Nucleobranchiata, fossil mollusks, XVII. 109.
 Nucleolites, fossil echinoidea, XVII. 100.
 Nucula, genus of mollusks, XV. 349—fossil, XVII. 106.
 Nuda, family of mollusks, XV. 401.
 NUDDEA, in India, XVI. 349, 350.
 Nudibranchiata, order of mollusks, XV. 371.
 NUGENAH, town in India, XVI. 350.
 Nuggets, IV. 276, 277.
 NUISANCE, in law, XVI. 350; XIV. 427—from smoke, XX. 352, 359—Nuisances Removal Act, XVIII. 205; XIX. 603.
 Num, Egyptian deity, VIII. 435.
 NUMA POMPILIUS, XVI. 350; XIX. 296.
 NUMANTIA, XVI. 350—taken by the Romans, XIX. 315; XX. 458.
 Numbers, abstract, II. 52—mystical properties of, III. 575—Chinese notion of virtue in odd numbers, VI. 571—in grammar, X. 747, 789—golden number, III. 788—symbols of hieroglyphical numbers, XI. 402—phrenological faculty, XVII. 563—Pythagorean doctrine of, XVIII. 711.
 — Book of, XVI. 350; XVII. 400.
 Numerius, genus of birds, XVI. 802.
 NUMERALS, XVI. 350—numeral characters, VI. 418—Roman, III. 572—Chinese, 573—Greek, 575—denary or Arabic, 579; I. 556; II. 7.
 Numeration, or Notation, in arithmetic, III. 582—digital, II. 8.
 NUMERIANUS (M. Aurelius), Roman emperor, XVI. 350; XIX. 349.
 Numida, genus of birds, XVI. 788.
 NUMIDIA, XVI. 350; II. 566—Masinissa, king of, XIV. 334—Micipsa, king of, 741—horsemanship in, XI. 673—its submission to Rome, XIX. 326—slavery, XX. 320. See Jugurtha, Juba.
 NUMISMATICS, XVI. 351—as illustrations of history, III. 422. See Coins, Money.
 Nummulites, fossil shells, XVII. 93, 94—nummulitic limestones, 94; XXI. 1007.
 NUN, river of Morocco, XVI. 392.
 — or Non, promontory, XVI. 392; XV. 594.

NUN—NYM

NUN, Nonn, or Nomi, Chinese river, XVI. 392.
 NUNCIO, XVI. 392.
 Nuncoreus, XI. 389.
 Nundcomar, Hindu prince, V. 529, 534; XI. 494.
 Nundidroog, Indian fortress, capture of, V. 541.
 NUNDINÆ, XVI. 392.
 NUNEATON, town in Warwick, XVI. 393.
 NUNEZ, or Nonius (Fernando), XVI. 393.
 — African river, XVI. 393.
 — or Nonius (Pedro), XVI. 393; III. 798; X. 504; XVI. 393.
 NUNS, XVI. 392—authority of abbess over, II. 13.
 NUORO, in Sardinia, XIX. 640.
 NUREMBERG, town in Bavaria, XVI. 393; IV. 518—library at, XIII. 421—Diet at, 760—peace of, XVIII. 824.
 Nuria, genus of fishes, XII. 257.
 NURPOOR, town in India, XVI. 394.
 Nurseries, culture of trees in, XVII. 766—public, in Paris, 283—nurseries for play-actors, XXI. 171.
 NURSIA, Sabine city, XVI. 394.
 Nursing of children, XIV. 441.
 NURTINGEN, town of Württemberg, XVI. 394.
 Nusairiyeh Mountains, XX. 902.
 — Syrian sect, XX. 908.
 Nushirvan, Persian king, XVII. 435.
 Nusseer Khan, IV. 640.
 NUSSEERABAD, in India, XVI. 394—sepoymutiny at, 309.
 Nussierite, mineral, XV. 106.
 Nut, screw, XIV. 397.
 Nut-galls, or gall-nuts, VIII. 280; X. 382—tannin and gallic acid from, VIII. 281.
 Nut-hatches, birds, XVI. 768.
 Nutation, IV. 14; XVIII. 459—solar, IV. 15—of the earth's axis, 15—discovery of, III. 805—solar and lunar nutation, XVIII. 457.
 Nutbrook Canal, VII. 754.
 Nutcrackers, birds, XVI. 765.
 NUTMEG, XVI. 394—of Australia, IV. 261—of the Banda Islands, 410—tree, V. 204—value of the imports of, VIII. 734.
 — order of plants, V. 204.
 Nutpe, Egyptian goddess, XI. 382, n. 9.
 Nutria, fur-skinned animal, X. 348, 351.
 NUTRITION, XVI. 395—atomy of the organs of, III. 58—common to plants and animals, 170—perhaps the only indispensable function of animal life, 195—of animalcules, ib.—of bees, IV. 571—organs of, in plants, V. 75—their anatomy, 76; physiology, 94—fishes, XII. 221—function of, XVII. 656—diseases of, 668, 689. See Aliment, Food, Dietetics, Digestion.
 NUTS, XVI. 395; V. 138—trees bearing, XVII. 768—as an article of food, IX. 761.
 Nuttallite, mineral, XV. 72.
 Nuttall (Thomas), on American birds, XVI. 733, 782, 786, 810.
 NUX VOMICA, XVI. 395; V. 200—poisonous properties of, XIV. 438; XVIII. 128, 130, 132. See Strychnia, Strychnos.
 Nuyts (Peter), his discoveries in New Holland, IV. 253—Nuyt's Land, ib.
 NYASSI, African lake, XVI. 396; II. 215; XVII. 600.
 Nyctaginaceæ, nat. order of plants, V. 203.
 Nyctelia, genus of insects, IX. 129.
 Nycteribia, genus of insects, IX. 259.
 Nycteris, genus of mammalia, XIV. 149.
 Nyctibius, genus of birds, XVI. 759.
 Nycticorax, genus of birds, XVI. 799.
 Nyctonomus, genus of mammalia, XIV. 148.
 NYIREGHAZA, town in Hungary, XVI. 396.
 Nyitra, town in Hungary, XVI. 156.
 NYKOPING, town in Sweden, XVI. 396.
 Nyl-ghau, in zoology, XIV. 210.
 Nymegen, town in Holland, XVI. 271.
 Nymphæ, in anatomy, III. 71.

NYM—OBL

Nymphæaceæ, nat. order of plants, V. 181.
 Nymphalis, genus of insects, IX. 208.
 Nymphomania, XIV. 532.
 Nymphon, genus of arachnides, III. 386.
 NYMPHS, XVI. 396.
 Nysson, genus of insects, IX. 196.
 Nyssones, tribe of insects, IX. 195.
 Nysten on the aorta, II. 790.

O

O, letter, XVI. 397—interjection, ib.—in abbreviations, II. 19.
 Oahu, one of the Sandwich Islands, XVIII. 270—climate, 271.
 Oajaca, Mexican state and city, XIV. 725, 718—antiquities of, 719.
 OAK, XVI. 397; V. 86, 113; XVII. 755; XXI. 268—age attained by the, II. 235—British, XVII. 757—evergreen, 761—Turkey, ib.—Turner's, ib.—live, ib.—different species, 765—American, ib.—oaks in Derbyshire, VII. 754—reverenced by the Druids, VIII. 184—specific gravity of, XII. 88, 89—poison-oak, V. 190—growth of, XXI. 269—large oaks, 270—different species, ib.—foreign oak-timber, 276.
 — knights of the, Moorish order of chivalry, XIII. 121.
 — order of plants, V. 208.
 Oak-bark, its use in dyeing, VIII. 304, n. 3—in tanning, XIII. 306.
 Oak-leaf galls. See Gall.
 Oak-timber, XVII. 755, 788; XXI. 270—its use in joinery, XII. 817—for the navy, XVI. 100, 101; XX. 118, 166—shrinkage of, in seasoning, 168—desiccation of, 170—strength of, 171, 172, 757, 758—size of, XXI. 271—value, ib.—sowing of acorns, 272—measuring of, 280.
 OAKHAM, or Okeham, in Rutland, XVI. 397—canal to, XIX. 555.
 Oannes, Chaldaic legislator, XV. 763.
 OASES, XVI. 397.
 OATES (Titus), XVI. 397; V. 427.
 OATHS, XVI. 398—oath of allegiance, II. 588—Arabian, III. 352—of calumny, VI. 105—coronation oath, VII. 412—of supremacy, VIII. 700—regarded as anti-christian, by Quakers, XVIII. 717. See Perjury.
 Oatmeal, absorbent property of, VII. 108.
 Oats, spikelet of, V. 113—flower of, 125—seed, 138—culture and varieties of oats, II. 310—quantities used as seed, 311—manures for, 312—diseases of, ib.—as food, IX. 758—analysis of, 759. See Corn-laws.
 OAXACA, XVI. 399. See Oajaca.
 Ob, river. See Obe.
 OBADIAH, the prophet, XVI. 299.
 OBAN, in Argyllshire, XVI. 399; III. 527.
 OBE, Obi, or Oby, river in Siberia, XVI. 400; XVII. 605, 647; XIX. 548; XXI. 297, 303.
 Obedience to law, XIII. 253.
 Obeid, African town, II. 225; XIII. 131.
 OBELISK, XVI. 400; II. 472; III. 457, 458; XI. 387, 407; VIII. 508—as gnomons, VII. 773; X. 464—at Forres, IX. 787.
 Oberhauser's microscope, XIV. 779.
 Oberland (Bernese), IV. 670.
 OBERLAND (Jean Frederic), XVI. 400.
 — (JEREMIE JACQUES), XVI. 401.
 OBERNAI, or Oberehnheim, town in France, XVI. 401.
 OBIDOS, town in Portugal, XVI. 401.
 OBJECT AND OBJECTIVE, SUBJECT AND SUBJECTIVE, XVI. 401.
 Object-glass micrometer, XIV. 746.
 Object-glasses, in telescopes, XXI. 124 et seq.
 Oblata, genus of fishes, XII. 287.
 OBLATE, XVI. 401—oblateness of the earth, I. 853.
 Obligation, created by law, XII. 255—moral, XV. 563. See Ethical Philosophy.
 OBLIQUE, XVI. 401—cases, X. 748.

OBO—OCT

OBLONG, XVI. 401.
 Oboe, XV. 710.
 OBOJAN, town in Russia, XVI. 401.
 OBOLUS, XVI. 401, 359; VII. 67.
 — fossil mollusks, XVII. 105.
 O'Brien (Smith), V. 671; XII. 502.
 Obrium, genus of insects, IX. 145.
 Obscenity, its prevalence in the middle ages, VI. 610.
 OBSERVATORIES, XVI. 402; I. 847—establishment of, 616—principal, III. 816—magnetical, XIV. 18—in Belgium, IV. 623—Edinburgh, VIII. 400—Germany, X. 592—Glasgow, 653—Greenwich, XI. 47—Italy, XII. 662.
 Observing machines, XIV. 414.
 Obsidian, mineral, XV. 72, 132.
 Obstetrics, XIV. 463.
 Obstruction, disease in domestic animals, XXI. 564, 568.
 Obverse, in coins, XVI. 353.
 Obwalden, in Switzerland, XXI. 494.
 OBY, island, XVI. 402.
 OCANA, town in Spain, XVI. 402.
 — town in New Granada, XVI. 402.
 OCCAM, or Ockham (William of), XVI. 402, 285—doctrines held by, I. 326, 328—on moral evil, 435—his theory of rectitude, XV. 550—on logic, XIII. 585, n.
 Occipital bone, in man, III. 18—in the mammalia, 78.
 OCCULTATION, XVI. 402—of plants and stars by the moon, IV. 50—of Jupiter's satellites, 70.
 OCCUPANCY, in law, XVI. 402.
 Occupations of the inhabitants of Scotland, XIX. 804; of London, XIII. 660; of the United States, XXI. 424.
 OCEAN, XVI. 402; X. 483; XVII. 572 et seq.—southern, colder than northern, II. 673—its influence on climate, III. 736; VI. 770—temperature of, XIV. 644—currents of, 652 (see Currents)—luminosity of, XIII. 458. See Sea, Tides, Atlantic, Pacific, &c.
 OCEANIA, XVI. 402. See Australasia.
 Oceanic stock of people, IX. 346.
 Oceanides, water-nymphs, XVI. 396.
 OCEANUS, in mythology, XVI. 402.
 OCELLUS LUCANUS, XVI. 402—on spiritual essences, III. 308.
 Ocelot, in zoology, XIV. 170.
 OCHIL HILLS, in Scotland, XVI. 403; VI. 749, 750; XVII. 457; XIX. 791.
 OCHINO or Ochinus (Bernardino), XVI. 402.
 Ochnaceæ, nat. order of plants, V. 189.
 Ochran, mineral, XV. 84.
 Ochres, XV. 112—yellow ochre, 108.
 Ochsenheimer, his work on lepidoptera, IX. 12.
 Ochterlony (Sir D.), XI. 506, 508; XVI. 148—his monument at Calcutta, VI. 69.
 Ochthera, genus of insects, IX. 256.
 Ochthiphila, genus of insects, IX. 256.
 Ockham (William of). See Occam.
 OCKLEY (Simon), orientalist, XVI. 403.
 Ockzakoff, IV. 743—dispute in 1791 about, V. 538.
 O'Clery (Michael), VIII. 106.
 OCLISEER, town in India, XVI. 403.
 O'CONNELL (Daniel), XVI. 403; V. 641; XII. 501—elected member for Clare, V. 653, 656—his progress through Ireland, 656—his anti-union agitation, 659—his plan of reform, 657—his attack on the king's speech in 1833, 663—his death at Genoa, 670—as an agitator, II. 240—Sir R. Peel's challenge to, XVII. 362—Shell's co-operation with, in the repeal agitation, XX. 100.
 Octædrite, mineral, XV. 110.
 Octæteris, Greek cycle, VI. 665.
 OCTAGON, XVI. 404.
 OCTAHEDRON, XVI. 404; XV. 41.
 Octastyle, in architecture, III. 511.
 OCTAVIA, sister of Augustus, XVI. 404.
 — wife of Nero, XVI. 405.
 Octavianus, or Octavius Cæsar, XIX. 323. See Augustus.
 Oether, northern navigator, XVIII. 161.

OCT—OER

OCTOBER, XVI. 405—Gardening Calendar for, XI. 760.
 — Equus, XVI. 405.
 Octogonotes, genus of insects, IX. 150.
 Octopoda, section of mollusks, XV. 400.
 Octopus, genus of mollusks, XV. 401, 395.
 Octroi, French tax, X. 273, 275; IX. 448.
 Oculina, fossil coral, XVII. 96.
 Oculinidae, polypes, XXI. 1005.
 Ocydromia, genus of insects, IX. 235.
 Ocypte, genus of arachnides, III. 389.
 Ocyptera, genus of insects, IX. 248.
 Ocypteræ, family of insects, IX. 244.
 Ocypterus, genus of birds, XVI. 748.
 Oczakow. See Oczakoff.
 Odax, genus of fishes, XII. 268.
 ODE, in poetry, XVI. 405; XVIII. 102, 105, 123. See Lyric poetry.
 ODEIPORE, Indian raj, XVI. 405.
 Odeium, in ancient Athens, IV. 165, 170.
 ODENATHUS, Prince of Palmyra, XVI. 405; XVII. 221; XIX. 349.
 ODENSE, town in the island of Funen, XVI. 405.
 ODENSWALD, German mountains, XVI. 405.
 ODER, river, XVI. 405; IX. 384, 385; X. 582; XVII. 605, 647; XVIII. 284, 662; XX. 274.
 ODESSA, Russian city, XVI. 405—port and trade of, IV. 743, 746—corn trade of, VII. 403—bombardment of, XIX. 501.
 Odier (Dr L.), on mortality at Geneva, XV. 622.
 — (M.), on the coverings of insects, IX. 29.
 ODHAM, town in Hampshire, XVI. 406.
 ODIN, XVI. 406; XV. 767; X. 300—his worship incentive of suicide, XX. 799.
 Odo, VIII. 659.
 ODOACER, XVI. 406; XII. 640.
 Odocantha, genus of insects, IX. 82.
 Odometer, XVII. 406.
 O'Donnell (Count del Abisbal), XX. 475, 476, 483.
 Odontacanthus, genus of fossil fishes, XVII. 117.
 Odontaspis, genus of fishes, XII. 324; XVII. 118, 119.
 Odonteus, genus of fossil fishes, XII. 344.
 Odontognathus, genus of fishes, XII. 237.
 Odontograph, XIV. 396.
 ODONTOLOGY, XVI. 407. See Teeth.
 Odontosaurus, fossil reptiles, XVII. 139.
 Odontostomus, genus of fishes, XII. 248.
 Odoriferous bodies, effect of electricity on, VIII. 599. See Odours.
 Odours of flowers, V. 152—caused by essential oils, XVI. 492—of plants, XVII. 408.
 ODRYÆ, Thracian tribe, XVI. 485.
 Odynerus, genus of insects, IX. 197.
 Eacides, king of Epirus, IX. 277.
 ECOLAMPADIUS, XVI. 485.
 Ecophora, genus of insects, IX. 219.
 ECUMENICAL COUNCILS, XVI. 485; VII. 465.
 Ecdalia, genus of insects, IX. 235.
 Ecdemera, genus of insects, IX. 133.
 Ecdemerites, tribe of insects, IX. 132.
 OEDENBURG, town in Hungary, XVI. 485.
 Edicnemus, genus of birds, XVI. 797.
 Edionychis, genus of insects, IX. 150.
 EDIPUS, Grecian king, XVI. 485.
 Egopsidae, family of mollusks, XV. 399.
 OEHLenschLAGER (Adam Gottlob), XVI. 486; VII. 750; XVIII. 120; XIX. 695.
 Oeland, island, XVI. 503.
 OELS, in Prussia, XVI. 488.
 Oeltzen's catalogue of stars, IV. 95.
 OENIADAE, town in Acarnania, XVI. 488.
 OENOTRIA, XVI. 488; XII. 633.
 OERSTED (Hans Christian), XVI. 488; VII. 750; XIX. 696—his early studies, I. 973—his discovery of electro-magnetism, 739, 973; VIII. 531, 600; XIV. 11; XXI. 638—details respecting it, I. 973—receives the prize of the Institute of France, 976—his scientific character, ib.—death, 977—on the compressibility of water, XII. 78; I. 723, 976—on voltaic electricity, XXI. 627—his improved

OER—OKE

electrical multiplier, 642—his compound circuits, 651.
 Oersted (Andreas), VII. 750.
 Oerstedtite, mineral, XV. 91.
 OESSEL, island, XVI. 488; IV. 404—geology of, XIX. 517.
 Esophagotomy, XXI. 565.
 Esophagus. See Esophagus.
 Oesterline (Mademoiselle), Mesmer's treatment of her case, XX. 416.
 Estracides, family of insects, IX. 245.
 Estrus, genus of insects, IX. 245—of the reindeer, XIII. 236.
 Estrymnades, XVIII. 161, n. 2.
 Eta, mountain in Greece, XI. 12.
 OETINGER (F. Christoph), XVI. 488.
 Oeyras, town in Brazil, climate of, V. 293.
 OFANTO, river in Italy, XVI. 488; XII. 638; XX. 238.
 Ofen, or Buda, V. 723.
 OFFENBACH, town in Hesse Darmstadt, XVI. 488.
 OFFENBURG, town in Baden, XVI. 489.
 OFFICIAL, XVI. 489.
 Offlets, in canals, XVI. 57.
 Ofior, his edition of Tyndale's New Testament, XXI. 400.
 Offsets of plants, V. 79.
 Offspring, care of, XIV. 441.
 Ofverbom on temperature, XIV. 674.
 Ogané, African chief, IV. 653.
 OGDENSBURG, town in New York, XVI. 489.
 OGECHEE, or Ogeechu, river, XVI. 489; X. 565.
 Ogee, in architecture, III. 511.
 Ogg (Mr), on the use of salt in preventing dry rot, VIII. 211.
 OGILVY (John), XVI. 489.
 Ogyges, IV. 192; VII. 710.
 O'Higgins (General), VI. 553.
 OHIO, American state, XVI. 489; XXI. 419—debt of, 428—wines, 888.
 — river, XVI. 491, 489; XVII. 395, 604, 647.
 OHLAU, or Olau, town in Prussia, XVI. 492.
 Ohm (Georg Simon), I. 982—his laws of electrical conduction, ib., 983; XXI. 623—deductions from, I. 984.
 OHRDRUF, in Saxe-Coburg Gotha, XVI. 492.
 ORCH (Loch), XVI. 492; XII. 438; XIX. 807.
 Oidemia, genus of birds, XVI. 816.
 Oidium Tuckeri, vine disease, X. 246, n. 247; XXI. 885, 887.
 Oikel, river, XX. 841; XIX. 425.
 OILS, XVI. 492; XVII. 409—plants yielding, II. 335; IX. 761—their use in angling, III. 156, n.—in lamps, XIII. 169—in lighthouses, 480—in decreasing friction, XIV. 405—in preserving timber, VIII. 212—for clocks, VII. 38—in plants, V. 73—made in Brazil from turtles' eggs, 209—allimentary qualities of, VIII. 20—surface of the water calmed by, 57—imports of, into the United Kingdom, 734, 735—filtering of, IX. 582—specific gravity of various kinds of, XII. 89—capillary attraction of, 92—in articles of food, XIX. 611—French, X. 255—olive-oil, V. 199; XI. 16, 32; XII. 445, 451; XVI. 494—of jasmine, V. 199—cageput oil, VI. 63—cod-liver oil, XVI. 328, 493—pilchard oil, VII. 408—castor-oil, (see that entry)—of the cahoun tree, XI. 610—volatile oils, VI. 517, 518—fixed oils, 517—winter green oil, XVII. 409—of pimento, 710—rosin-oil, XIX. 87—as a preservative against vermin in domestic animals, XXI. 579.
 Oil-gas, X. 427—compared with coal-gas, 429—its deterioration by keeping, 432.
 Oil-painting, XVII. 60, 63.
 Oil-thermometers, IV. 457; XXI. 221.
 Oil-varnishes, XXI. 526.
 Oinomania, XIV. 533.
 OISE, XVI. 497.
 OKA, Russian river, XVI. 498.
 OKAMANDL, in British India, XVI. 498.
 O'KEEFE (John), dramatist, XVI. 498.
 OKEN (Lorenz), naturalist, XVI. 498.

OKE—OLM

Okenite, mineral, XV. 76.
 O'Keys, impostors as magnetic somnambulists, XX. 427, 432.
 OKHOTSK, in Russia, XVI. 503; XIX. 548.
 — SEA OF, XVI. 503.
 Olacaceæ, nat. order of plants, V. 185.
 Olaf (St), XVI. 317.
 OLAND, island, XVI. 503.
 Olafeta (General), IV. 813.
 Olau. See Ohlau.
 Olave's invasion of England, VIII. 661.
 Olax, order of plants, V. 185.
 Olber's (Dr), his discovery of comets, I. 835; of Pallas and Vesta, ib.; III. 808; IV. 68, 69—on the orbits of comets, VII. 169.
 Olcott (H. S.), on the Chinese and African sugar-canes, XX. 798.
 Old age, XIV. 425.
 Oldacre (Isaac), his method of raising mushrooms, XI. 736.
 OLDCASTLE (Sir John), Lord Cobham, XVI. 503; VIII. 688. See Cobham (Lord).
 — town in Ireland, XVI. 504.
 OLDENBURG (Grand Duchy of), XVI. 504
 — postal system of, XVIII. 424—weights and measures, XXI. 812.
 — (city), XVI. 505.
 — (HENRY), XVI. 505; IX. 672, 673.
 Oldfield (Mrs), actress, XXI. 172, 175.
 OLDBAM, in Lancashire, XVI. 505.
 — (JOHN), poet, XVI. 506.
 Oldhamia, fossils, XVII. 96, 98.
 Oldham's coupling of parallel axes, XIV. 397.
 OLDYS (William), bibliographer, XVI. 507.
 Oleaceæ, nat. order of plants, V. 199.
 Oleaginous principles from plants, IX. 756; animals, 757.
 — cements, XX. 715.
 OLEARIUS (Adam), traveller, XVI. 507—on the use of tea in Persia, XXI. 88.
 Oleaster order of plants, V. 205.
 — XVII. 764.
 Olefant gas, specific gravity of, XII. 89.
 Oleg, XIX. 469.
 Oleic acid, II. 381.
 OLERON, island, XVI. 507; VI. 422.
 Olfactory nerves, XVII. 675.
 Olga, XIX. 470.
 Olibanum, V. 190.
 Oligoclase, mineral, XV. 71.
 Oligon spar, XV. 100.
 Olin (Dr), his account of modern Jerusalem, XII. 745—on Judea, XVII. 184.
 Olin on ornithology, XVI. 725.
 OLINDA, city of Brazil, XVI. 507; XVII. 415.
 Olistes, genus of fishes, XII. 297.
 OLIVA (Fernan Perez de), XVI. 507.
 — town of Spain, XVI. 507.
 — genus of mollusks, XV. 386—fossil, XVII. 110.
 OLIVAREZ (G. G., Conde Duque de), XVI. 507; XX. 470.
 Olivary bodies of the brain, III. 55.
 Olive order of plants, V. 199.
 — (the), V. 199—in Palestine, XVII. 190—in Italy, XX. 248.
 — oil, XVI. 494; XI. 16, 32; XII. 445, 451, 640; IX. 761; XX. 248—specific gravity of, XII. 89.
 Olive-colour, in dyeing, VIII. 312, 313, 320.
 Olivenite, mineral, XV. 103.
 OLIVENZA, town in Spain, XVI. 508.
 OLIVER (Isaac), miniature-painter, XVI. 508.
 — (le Dian), X. 28.
 — (PETER), XVI. 508.
 OLIVES (Mount of), XVI. 508; XII. 736, 745.
 OLIVET (Joseph Thoullet d'), XVI. 508.
 Olivetan (Robert), his French Bible, IV. 701.
 Olivia, treaty of, XX. 852.
 OLIVIER (G. Antoine), entomologist, XVI. 508—his entomological works, IX. 8—on ants, III. 261.
 Olivine, mineral, XV. 89—crystals of, in basalt, 133, 190.
 Olmsted (Prof.), on the geology of North Carolina, VI. 246.

OLM—ONO

OLMUTZ, in Moravia, XVI. 509—university of, XXI. 492.
 OLNEY, in Bucks, XVI. 509.
 — Hymns, XII. 189.
 OLONETZ, in Russia, XVI. 509; XIX. 521.
 Olonois (L'), a buccaneer, V. 710.
 Olophernes, VI. 222.
 OLORON, town in France, XVI. 509.
 OLOT, town in Spain, XVI. 510.
 OLTENITZA, XVI. 510; VII. 674.
 Olympeium, in Athens, IV. 163.
 OLYMPIA, in Greece, XVI. 510.
 OLYMPIAD, XVI. 510; VI. 665.
 OLYMPIAS, mother of Alexander the Great, XVI. 510.
 OLYMPIC GAMES, XVI. 511, 510, 364; VI. 665; X. 398—their influence on Greek art, XVII. 50—judges at, XI. 289.
 — year, VI. 665.
 OLYMPIODORUS, XVI. 511.
 OLYMPUS, mountain, XVI. 511; XI. 10, 11—height of, XVII. 642.
 OLYNTHUS, XVI. 512—Olinthians, XIII. 763—their submission to the Macedonians, 761.
 OMAGH, town in Ireland, XVI. 512; XXI. 408.
 Omalisus, genus of insects, IX. 107.
 Omalium, genus of insects, IX. 104.
 OMAN, in Arabia, XVI. 512; III. 359.
 OMAR I. (A. H. Ibn-al-Khattab), XVI. 512; III. 362—mosque of, at Jerusalem, XII. 744—capture of Jerusalem by, 734—his conduct regarding the burning of the Alexandrian library, II. 471; XIII. 381; VIII. 475.
 — II., XVI. 513.
 — (Pasha), XIX. 500; XXI. 375.
 Ombos, ruins of, VIII. 514.
 OMEN, XVI. 513.
 OMER (St), town in France, XVI. 513—population, X. 277.
 — Jewish measure, VII. 421.
 OMERCOTE, town in India, XVI. 513.
 OMETEPE, island, XVI. 513.
 Ometis, genus of insects, IX. 123.
 Omichund, V. 476.
 Ommastrephes, genus of mollusks, XV. 399.
 Omniades, dynasty of the, III. 363.
 Omnibus, carriage, VII. 42—omnibuses in London, XIII. 679—New York, XVI. 225.
 Omnipotence of God, XXI. 191.
 Omnipresence of God, XXI. 190.
 Omniscience of God, XXI. 191.
 OMNIUM, XVI. 514.
 Omoa, port of, in Honduras, XI. 612.
 Omophron, genus of insects, IX. 98.
 Omphalodes, dyeing lichen, VIII. 289.
 OMSK, town in Russia, XVI. 514.
 OMUN, town in Guinea, XVI. 514.
 ON, city, XVI. 514. See Heliopolis.
 Onagraceæ, nat. order of plants, V. 192.
 ONATAS, Greek sculptor, XVI. 514; XIX. 854.
 Onchuna, genus of entozoa, XXI. 982.
 Onchus, genus of fossil fishes, XII. 339; XVII. 116.
 Oncidiadæ, family of mollusks, XV. 374.
 Oncidium, genus of mollusks, XV. 374.
 Oncidoris, genus of mollusks, XV. 374.
 Oncoceras, fossil mollusks, XVII. 112.
 ONDA, town in Spain, XVI. 514.
 O'Neale, or O'Neill (Sir Phelim), his rebellions in Ireland, V. 399; XII. 476, 478, 481, 185.
 ONEGA, Russian lake, XVI. 514; XIX. 516.
 — GULF OF, XVI. 514—cape, XIX. 516.
 ONEGLIA, in Sardinia, XVI. 514.
 ONGOL, town in India, XVI. 514.
 Onion, culture of, XI. 741—potato onion, ib.—pearl, ib.
 Oniscides, crustacea, VII. 543.
 Oniticellus, genus of insects, IX. 119.
 Onitis, genus of insects, IX. 120.
 ONKELOS, Jewish rabbi, XVI. 514—Targum of, IV. 697; XIX. 839; XXI. 23.
 Onkosin, mineral, XV. 84.
 Onnos, Egyptian king, VIII. 455.
 Onofrite, mineral, XV. 117.

ONO—OPI

- ONOMATOPEIA, XVI. 514.
 Onondaga group of rocks, XV. 199.
 — salt springs, XVI. 215.
 ONOSANDER, philosopher, XVI. 514.
 ONTARIO, lake, XVI. 515; VI. 134; XVII. 605—harbours on, XVI. 214.
 ONTIENTE, town of Spain, XVI. 515.
 Onthophagus, genus of insects, IX. 119.
 Ontological proof of the existence of God, XXI. 186.
 ONTOLOGY, XVI. 515; XIV. 603, 555, 610.
 Onychoteuthis, genus of mollusks, XV. 399—fossil, XVII. 114.
 ONYX, XVI. 515; VI. 67; II. 231; XV. 69.
 OOCHEYRA, in India, XVI. 515.
 OODEPOOR CHOTA, in India, XVI. 515.
 OODEYPOOR, in India, XVI. 515.
 OOEJIN, city in India, XVI. 515.
 Oolite, XV. 92, 146—period of the, 206—rocks, 206, 207—flora of, V. 236; XVII. 641—boring of, V. 44—corals, XVII. 97—bryozoa of, 98—fishes, XII. 350; XVII. 126, 127, 640—in Scotland, XIX. 793—as building-stones, XX. 712—in Sutherland, 841.
 Oom-er-Begh, river, XV. 594.
 OOMRAWUTTEE, town in India, XVI. 515.
 Oondee oil, XVI. 496.
 Oophoridium, in botany, V. 144.
 Oorai. See Ural.
 OORCHA, town in India, XVI. 516; V. 763, 764.
 Oorians, XI. 466.
 OORT (Adam Van), painter, XVI. 516.
 OOSTERHOUT, town in Holland, XVI. 516.
 OOTAKAMUND, town in India, XVI. 516.
 Ootadroog, in Hindustan, XI. 489.
 Ootrophic organs, III. 70.
 Opacity, XIII. 451; XVI. 551—in minerals, XV. 58.
 Opal, XV. 69—specific gravity of, XII. 88—mines of, in Honduras, XI. 613.
 Opalescence, XV. 58.
 Opatrum, genus of insects, IX. 130.
 Opdam (Admiral), V. 422; XI. 576.
 Opelousas, in Louisiana, XIII. 699.
 OPERA, XVI. 516—French, II. 68—Italian, VIII. 147—English, 165.
 Opera-house, London, XIII. 675; XXI. 174.
 Operations in surgery, XX. 820.
 Operculata, section of mollusks, XV. 375.
 Operculum, in botany, V. 145—in mollusks, XV. 366 *et passim*.
 Opetiorhynchus, genus of birds, XVI. 769.
 Ophelia, genus of annelides, XI. 299.
 Ophellas, his alliance with Agathocles, VI. 285.
 Ophicephalus, genus of fishes, XII. 289, 290.
 OPHICLEIDE, XVI. 516; XV. 711.
 Ophidia, XVII. 634; XIX. 39—fossil, XVII. 153—dental system of, XVI. 431—geological distribution of, XVII. 154, 634—number known, XIX. 51, n.
 Ophidiidae, family of fishes, XII. 268.
 Ophidium, genus of fishes, XII. 268.
 Ophioglossaceae, sub-order of ferns, V. 216.
 OPHTHOLOGY, XVI. 516. See Reptilia.
 Ophion, genus of insects, IX. 191.
 Ophiopsis, genus of fossil fishes, XII. 335.
 Ophiostoma, genus of entozoa, XXI. 980.
 OPHIS, XVI. 516; VII. 185; X. 460; XV. 530; XXI. 27.
 Ophisaurus, genus of reptiles, XIX. 41.
 Ophisternon, genus of fishes, XII. 231.
 Ophisuridae, family of fishes, XII. 232.
 Ophisurus, genus of fishes, XII. 232.
 Ophites, gnostics, X. 688.
 Ophiura, XXI. 992, 993, 995.
 Ophiuridae, star-fishes, XXI. 984, 992, 995—fossil, XVII. 99.
 Ophiurus, genus of fossil fishes, XII. 347.
 Ophryessa, genus of reptiles, XIX. 34.
 Ophthalmia, in Egypt, VIII. 422, 423—in New South Wales, IV. 279—successful mode of treatment, VIII. 423, n. 9—in the domestic animals, XXI. 577.
 OPHE (John), painter, XVI. 517—his pictures, III. 716; XVII. 80.
 — (AMELIA), XVI. 517.

OPI—ORA

- Opinion, the Economists on, VIII. 377, 378—its influence on laws, XIII. 259—Plato on, XVII. 797, 798.
 Opis, fossil mollusks, XVII. 108.
 Opisthocœlia, fossil reptiles, XVII. 152.
 Opisthocomus, genus of birds, XVI. 786.
 Opisthodomus, in architecture, III. 511.
 Opisthognathus, genus of fishes, XII. 310.
 OPITZ (Martin), German poet, XVI. 517—poetry of, XVIII. 118.
 OPTUM, XVI. 517—an alimentary substance in the East, III. 179—of Hindustan, XI. 453, 528—specific gravity of, XII. 89—poisonous quality of, XIV. 436—XVIII. 127, 128, 130—trade, in China, VI. 591, 596—its effect on the brain, XVII. 702.
 — poppy, V. 182.
 Oplichthys, genus of fishes, XII. 282.
 Opobalsamum, IV. 401.
 Opomyza, genus of insects, IX. 256.
 Opoponax, V. 195.
 OPORTO, XVI. 518—revolution at, in 1820, XVIII. 388—newspapers, XVI. 203—porcelain factory near, XVIII. 438—wine trade of, XXI. 885.
 Opossum, XIV. 174; XVII. 631—dentition of, XVI. 448.
 OPPELN, in Prussia, XVI. 520; XX. 275.
 Oppert (Jules), on the inscribed tablets of Assyria, XIII. 382.
 OPPIAN, Greek poet, XVI. 520—on hunting, XII. 32—his works, XIV. 124.
 OPPIDO, town of Naples, XVI. 520.
 Oppidolo, XVII. 229.
 Optative mood, X. 769.
 Optic nerves, III. 45; XIII. 460; XVII. 675, 678.
 Optical instruments, XVI. 696—improvement in, III. 808. See Camera, Lens, Micrometer, Telescope, &c.
 — properties of minerals, XV. 56.
 — paradox, I. 897.
 OPTICS, XVI. 521—history of, ib., I. 619—631, 661—670, 746—755, 800, 801, 893—925—contributions of Euclid, 619, 896; Ptolemy, 620; Alhazen, 622, 623; Aristotle and Epicurus, 621; Roger Bacon, 623; Maurolycus, 624; Baptista Porta, ib.; Kepler, 625; Antonio de Dominis, ib.; Snellius, 627; Descartes and Fermat, 628, 629; James Gregory, 629; Dr Barrow, 630; Grimaldi, ib.; Huygens, ib., 631, 895; Newton, 661; Descartes, Hadley, Mayer, Dolland, &c., 747—749; Dr Robert Blair, 751; Fraunhofer, 752, 915; Sir W. Herschel, 752; Malus, 755, 901, 902; Thomas Young, 893, 896; Hooke, 895; Fresnel, 899, 903; Arago, 907; Biot, 909, 916; Foucault, 910; Sir David Brewster, 911; Seebeck, 916; Sir J. Herschel, 917; Airy, ib.; Sir W. R. Hamilton, 918; Dr Lloyd, ib.; Macculagh, 919; Cauchy, 919, 920; Jamin, ib.; Rudberg, Powell, &c., 920, 921; Ritter, 921; Wollaston, Mrs Somerville, Niepee, Daguerre, Talbot, 922, 923; Stokes, Wheatstone, 924, 925 (see all these articles)—principles of the science applied to the improvement of light-houses, 753—first notions of photometry given by Marie, ib.—successive propagation of light, IV. 74—corona or halo, VII. 410—optical phenomena of the atmosphere, XIV. 679—optical properties of minerals, XV. 56—changes induced by magnetism, I. 981. See Astronomy, IV. 51, Aberration, Achromatic Telescopes, Burning-glasses, Camera, Chromatics, Colours, Kaleidoscope, Light, Polarization of Light, Meteorology, Micrometer, Microscope, Photography, Photometer, Refraction, Reflection, Spectrum, Stereoscope, Telescope.
 Optigraph, VI. 119.
 OPTIMISM, XVI. 698—Leibnitz's scheme of, I. 126.
 Opyornis, extinct bird, size of its egg, XVII. 637.
 OR, in heraldry, XVI. 698; XI. 324.
 ORA, Saxon coin, XVI. 698; VII. 71.
 — Tube. See Uratepe.
 Oracanthus, genus of fossil fishes, XVII. 117.

ORA—ORD

- Orache, garden plant, XI. 741.
 ORACLE, XVI. 698; VII. 617—of Didona, VIII. 88—Delphi, VII. 709—Fontenelle's History of, IX. 754.
 ORAN, in Algeria, XVI. 699; II. 571, 574, 575.
 Orang-outang, XIV. 137, 138; XVII. 631—its skull, III. 77—dentition, XVI. 456.
 ORANGE, town in France, XVI. 699.
 — fruit, XVI. 700—sweet and bitter, V. 185, 186—oil receptacles in the rind of, 73—imports of, VIII. 735.
 — order of plants, V. 185.
 — peel, oil of, XVI. 496; of the flowers, ib.—of the leaves, ib.
 — RIVER, XVI. 699; II. 214; X. 711.
 — SOVEREIGNTY, XVI. 700.
 — tree, culture of, XI. 729—specific gravity of, XII. 89—perfumes from, XVII. 408.
 Orange-colour, dyeing of, VIII. 298, 312, 318.
 Orangemen, Irish party, XII. 497.
 Oration, funeral, X. 345.
 ORATORIO, in music, XVI. 700.
 Orators, among the Druids, VIII. 189—parliamentary, of the present day, XVII. 300.
 ORATORY, XVI. 700. See Rhetoric.
 ORAVICZA, town in Hungary, XVI. 700.
 ORB, town in Bavaria, XVI. 700.
 Orbelus, mountain, XI. 10, 11.
 Orbicula, family of crustacea, VII. 541.
 Orbigny (M. d'), his classification of South American tribes, IX. 349—on fossil sponges, XVII. 92; shells, 93; corals, 97; bryozoa, ib.; crinoidea, 98—zoophytes, XXI. 1007.
 Orbitoides, fossil shells, XVII. 93, 94.
 Orbits of the skull, in man, III. 30—in the mammalia, 79.
 — of comets, the sun, planets, and satellites. See these articles respectively.
 ORCAGNA (Andrea), artist, XVI. 700; XVII. 62; XIX. 860.
 — (Bernardo), XVII. 62.
 Orcanthus, genus of fossil fishes, XII. 339.
 Orchan, XXI. 368.
 ORCHARD, XVI. 700; XI. 697—orchards in Bengal, IV. 649; in Herefordshire, XI. 349; Lanarkshire, XIII. 174.
 Orchesia, genus of insects, IX. 132.
 Orchestes, genus of insects, IX. 140.
 ORCHESTRA, XVI. 700; XV. 741—in Greek theatres, VIII. 135.
 ORCHESTRINO, XVI. 700.
 ORCHESTRION, XVI. 700.
 Orchidaceae, nat. order of plants, V. 211.
 ORCHILLA WEED, XVI. 700; V. 217.
 Orchis, plant, V. 211.
 ORCHOMENUS, city of Arcadia, XVI. 701.
 — city of Boeotia, XVI. 701.
 Orco, falls of the, XVII. 604.
 Orcynus, genus of fossil fishes, XII. 345.
 ORDEAL, XVI. 701—trial by, XIII. 22; in Madagascar, 793; in Burmah, V. 780.
 Order, in architecture, III. 511—orders described, 441, 442, 451, 463—Greek, 463—Roman, 469—Modern Italian, 477.
 — of plants, characters and arrangement of, V. 180—their distribution over the globe, 222.
 — phrenological faculty, XVII. 563.
 ORDERICUS (Vitalis), XVI. 702.
 ORDERS, in the church, XVI. 702.
 — religious, in the Romish Church, XVI. 702. See Monachism, Mendicants, &c. &c.
 — holy, XVI. 702, 703, 704. See Ordination.
 — in natural history, V. 176—in mineralogy, XV. 68—sub-orders, V. 175.
 — of knighthood, XIII. 122, 123. See Knights and Knighthood.
 Ordinance, in architecture, III. 511.
 Ordinances, religious, errors regarding, I. 535, 536.
 Ordinaries, in heraldry, XI. 327.
 Ordinates, X. 543—to describe an ellipsis by, XX. 726.
 ORDINATION, XVI. 702—form of, in apostolical times, not fully recorded, I. 494;

ORD—ORI

- reasons of this, ib.—views of the Independents on, XII. 371—Presbyterian, XVIII. 482—it may have happened, in the church, that some one who never underwent ordination, may have ordained others, I. 503—no one can trace his ordination up to the time of the Apostles, ib.
 ORDANCE, XVI. 704—tables of, XI. 133—early use of, 150; XVI. 93. See Artillery, Cannon, Gun, Navy.
 — department of the British army, III. 664—map office at Southampton, XX. 452—survey; see Trigonometrical Survey.
 Oreades, mountain-nymphs, XVI. 396.
 OREBRO, town in Sweden, XVI. 705.
 OREGON, territory of the United States, XVI. 705; XVII. 594.
 Oreinus, genus of fishes, XIII. 257.
 OREL, in Russia, XVI. 706, 707; XIX. 521.
 ORELLANO (Francisco), XVI. 706.
 ORENBURG, in Russia, XVI. 707, 708; XIX. 521.
 ORENSE, XVI. 708—province, X. 372, 373.
 ORES, in mineralogy, XVI. 704—of iron, XII. 539—saline ores, XV. 99—sparry iron, ib.—oxidized ores, 107—tin ore, 109—manganese, 111—red copper, 112—grey antimony ore, 118—grey copper, 120. See Mines and Mining, Smelting.
 ORESTES, XVI. 708.
 Orestias, genus of fishes, XII. 252.
 Oreus, city of Eubœa, XI. 536.
 ORFAH, town in Turkey, XVI. 708.
 ORFILA (M.-J.-Bonaventure), XVI. 708—his work on poisons, XIV. 424—on poisons, 434, 436.
 ORFORD, town in Suffolk, XVI. 709.
 Orgagna (Andrea), XVI. 700.
 ORGAN, musical instrument, XVI. 709; XV. 740—at Haarlem, XI. 173—a novel one suggested, II. 108—at Birmingham, IV. 731.
 — mountains, XIX. 174.
 Organic and inorganic bodies, VI. 502; II. 747; XVII. 648.
 — chemistry. See Chemistry, Organic.
 — rocks, XV. 130, 142.
 — remains, in volcanic rocks, XXI. 607. See Palæontology.
 Organisation, molecular theory of, XVII. 649—cell theory, 651.
 — of literature and art, XIX. 107.
 Organism, definition of the term, XVII. 91.
 ORGANO-LYRICON, musical instrument, XVI. 713.
 Organs of the human body, II. 777—classification of, III. 3.
 Organzine silk, XX. 281.
 ORGIA, XVI. 714.
 Orgyia, genus of insects, IX. 214.
 ORLA, town in Spain, XVI. 714.
 — town in Naples, XVI. 714.
 ORIBASIVS, Greek physician, XVI. 714; II. 751; XIV. 455—his knowledge of surgery, XX. 813.
 Oribata, genus of arachnides, III. 388.
 Orient (L'), town in France. See Lorient.
 Oriental, crystallisation of, VII. 563.
 — historians, XI. 548—coins, XVI. 390—versions of the Scriptures, XIX. 838.
 Orifice, in hydraulics, XII. 111—theory of fluids issuing from, 103; experiments on, 111.
 Oriflamme, standard, IV. 242.
 ORIGEN, XVI. 714—friendship between him and Ambrose, II. 662—on apparitions, III. 311—on the millenium, XV. 14—his Hexapla, XI. 364; XVIII. 266; XIX. 840—Huet's edition of his works, XI. 793.
 Origenists, sect, XVI. 715.
 ORIHUELA, town in Spain, XVI. 716.
 ORINOCO, river, XVI. 716; XVII. 604, 647—basin of, II. 668—lanos of, XVII. 609.
 Oriole, golden, XVI. 754—Baltimore, 763—red-shouldered, 762.

ORI—ORP

Orion, genus of birds, XVI. 754.
 ORION, XVI. 717—nebula of, I. 842, 843.
 — constellation, IV. 80.
 ORISSA, XVI. 717.
 ORISTANO, town in Sardinia, XVI. 717.
 ORIZABA or Orizava, town in Mexico, XVI. 717; XIV. 725.
 — or Orizava, volcano, XIV. 714; XVI. 717.
 ORKNEY ISLANDS, XVI. 717—fisheries, IX. 640, 642—barrows in, IV. 473—duns in, VIII. 244—vitrified cairns in, IX. 792—agricultural statistics, XIX. 796, 797, 798—population, 799.
 Orlando, Cape, XX. 244.
 Orle, in heraldry, XI. 330.
 Orleanais, French province, X. 277.
 ORLEANS, city in France, XVI. 722; XIII. 636—centre employed in building the bridge of, VI. 378; the finest piece of carpentry in the world, XX. 772—university of, XXI. 448.
 — (Duke of), his aerial voyage, II. 177—death of, in 1842, X. 217.
 — HOUSE OF, XVI. 722. See France.
 — island in the St Lawrence, XVI. 722.
 — (Maid of). See Joan of Arc.
 — NEW, XVI. 722, 176.
 ORLEY (Bernard Van), painter, XVI. 722.
 ORLOFF, or Orlov (Gregory), XVI. 723.
 — (ALEXIS), XVI. 723.
 — in Russia. See Orel.
 ORLOP deck, XVI. 723.
 ORME (Robert), historian, XVI. 723—on India, XI. 474, 475.
 ORMEA, in the Sardinian States, XVI. 723.
 ORME'S HEAD (Great), XVI. 723.
 ORMOND (Duke of), XVI. 723; VI. 28.
 ORMSKIRK, in Lancaster, XVI. 723.
 ORMUZ, or Ormus, island, XVI. 724; XI. 460—composed of rock salt, XVII. 623.
 ORNE, in France, XVI. 724.
 — river, XVI. 724.
 Orneodes, genus of insects, IX. 219.
 Ornismya, genus of birds, XVI. 769.
 Ornithichnites, XVII. 154.
 Ornithobia, genus of insects, IX. 259.
 ORNITHOLOGY, XVI. 725—blood-globules of birds, II. 779—bones, III. 74, 83—muscles, 92—mechanism of perching, ib.—organs of smell, 94—eyes, 95, 97—ears, 99—tongue, 100—vocal organs, 102—nervous system, 103, 104—stomach, crop, and gizzard, 109—intestines, 110—organs of circulation, 112—lungs, ib.—brain, 104—pairing, 181—hybrids, XII. 63—hibernation, 62—order of the appearance of birds on the earth, XVII. 92—birds of Palestine, 192—development of the skulls of, 565—distribution of, 633—respiration, XVIII. 75—Latham's works on, XIII. 247; Edwards' VIII. 413—birds of the Polar Regions, XVIII. 179—of America, II. 713—Arabia, III. 247—Asia, 741—Audubon's works on, IV. 238—Wilson's American ornithology, XXI. 873. See Bird, Fowling, Eagle, Hawk, Shooting, &c., and the geographical articles.
 Ornithomyia, genus of insects, IX. 259.
 Ornithorhynchus, XIV. 193; III. 75; IV. 260; XVII. 631—teeth and jaws of, XVI. 419, 438, 440—in Tasmania, XXI. 31.
 Orobanchaceæ, nat. order of plants, V. 202.
 OROBIO (Baltasar), XVII. 1.
 Orobittis, genus of insects, IX. 140.
 ORODES, XVII. 311.
 ORODUS, genus of fossil fishes, XII. 340; XVII. 118.
 OROGNATHUS, genus of fossil fishes, XII. 335; XVII. 125.
 Oronsay, lighthouse on, XIII. 479.
 ORONTES, river, XVII. 1; XX. 903.
 Orontiaceæ, nat. order of plants, V. 214.
 Oros, Egyptian king, VIII. 461.
 OROSHAZA, town in Hungary, XVII. 1.
 OROSIUS (Paulus), XIII. 1.
 OROTAVA, in Teneriffe, XVII. 2; VI. 166.
 Orphan Hospital, Edinburgh, VIII. 402.

ORP—OSM

Orphan schools for seaman's children, XVI. 119.
 ORPHEUS, XVII. 2—hymns of, XII. 118.
 Orpiment, XV. 122; VI. 495—red, XV. 122.
 ORRERY (Earl of), XVII. 2. See Boyle (Charles).
 — XVII. 2, 753—is a mere plaything, IV. 149—electrical, VIII. 554.
 Orris root, V. 212.
 Orsielle, lichen. See Archil.
 Orsodacna, genus of insects, IX. 147.
 ORSOVA (Old and New), towns on the Danube, XVII. 2.
 Ortalis, genus of insects, IX. 251.
 ORTELIUS (Abraham), XVII. 2.
 Orthacanthus, fossil fishes, XVII. 117.
 Orthagoriscini, sub-family of fishes, XII. 314.
 Orthagoriscus, genus of fishes, XII. 313, 314.
 ORTHEZ, town in France, XVII. 3—battle of, V. 614.
 Orthidæ, family of mollusks, XV. 338—fossil, XVII. 104.
 Orthids, genus of fossil mollusks, XV. 338; XVII. 104.
 Orthite, mineral, XV. 90.
 Orthoceratites, fossil shells, XV. 394; XVII. 112.
 Orthoceras, fossil mollusks, XVII. 112.
 Orthocerus, genus of insects, IX. 130.
 Orthochætes, genus of insects, IX. 140.
 Orthochile, genus of insects, IX. 244.
 Orthoclase, mineral, XV. 70.
 Orthodox, in theology, I. 531.
 ORTHOGRAPHIC PROJECTION OF THE SPHERE, XVII. 3.
 ORTHOGRAPHY, XVII. 3; II. 611; X. 744—in architecture, III. 511.
 Orthonyx, genus of birds, XVI. 753.
 Orthoptera, order of insects, IX. 25, 153.
 Orthostyle, in architecture, III. 511.
 Ortilda, genus of birds, XVI. 785.
 Ortiz de Retz (Ynigo), exploratory voyage of, IV. 262.
 Ortolan, bird, XVI. 760.
 ORTONA, town of Naples, XVII. 3.
 Ortygis, genus of birds, XVI. 792.
 Ortyx, genus of birds, XVI. 791.
 ORURO, in Bolivia, XVII. 3; IV. 821—silver mines of, IV. 825—climate, 826—population, 828.
 ORVIETO, town in the Papal States, XVII. 3—delegation of, 243.
 Orville (M. de), on Mount Ætna, II. 190.
 Orycteropus, genus of mammalia, XIV. 191—teeth of, III. 105; XVI. 413, 414, 440.
 Oryctes, genus of insects, IX. 122.
 Orygma, genus of insects, IX. 254.
 Oryssus, genus of insects, IX. 134.
 Oryx, genus of mammalia, XIV. 210.
 OSAKA, or Osacca, city in Japan, XVII. 3.
 Osbaldeston (George), XI. 676.
 Osborne House, VII. 470; XXI. 862.
 — eocene rocks, XV. 212, 213.
 Oscan alphabet, II. Plate.
 OSCHATZ, town in Saxony, XVII. 3.
 OSCHOPHORIA, festival, XVII. 3.
 Oscillation of fluids, XII. 164—of pendulum, XVII. 376—time of performing an, XX. 157. See Pendulum.
 — (centre of), XIX. 436—James Bernoulli's mode of treating the problem respecting, I. 719.
 OSERO, island, XVII. 4.
 O'Shaughnessy (Dr), on hemp, XI. 312.
 Osiers, their use in basket-making, IV. 487—cultivation of, 488. See Willow.
 OSTMO, town in the Papal States, XVII. 4.
 OSIRIS, XVII. 4; III. 620; VII. 711; VIII. 438; XI. 383—mysteries of, XV. 752—exploits of, ib.
 Oser (Mr), on the boring of shell-fish, XV. 353.
 Osman, founder of the Turkish empire, XXI. 368; VII. 319—other sultans of that name, XXI. 369.
 Osmanli, IX. 344, 388. See Turks.
 Osmazome, IX. 757; VIII. 19.
 Osmroides, genus of fossil fishes, XII. 347.

OSM—OTH

Osmerus, genus of fishes, XII. 245—fossil, 347.
 Osmia, genus of insects, IX. 200.
 Osmic acid, VI. 499.
 Osmiridium, XV. 113.
 Osmium, VI. 499—discovery of, XXI. 154.
 Osmium-iridium, XV. 113.
 Osmont (J. B. L.), notice of his Typographical Dictionary, IV. 714.
 Osmundaceæ, sub-order of ferns, V. 216.
 OSNABURG, in Hanover, XVII. 4; XI. 211.
 Osnaburgs, kind of linen, IX. 784.
 OSORIO (Geronymo), XVII. 4.
 Osorkon, Egyptian king, VIII. 463.
 Osphromenus, genus of fishes, XII. 289, 290.
 Osprey, bird, XVI. 743.
 OSSA, mountain in Thessaly, XVII. 4, 372; XI. 12.
 Ossetes, IX. 390—their language, ib.; XIII. 216; XVII. 530.
 OSSIAN, XVII. 4—Dr Blair's Dissertation on, IV. 750—Cesarotti's Italian version of, VI. 389—Malcolm Laing's Dissertation on, XIII. 158—Adelung's opinion of, 212; Dr Johnson's, XII. 801.
 Ossification, II. 829—of the human skull, III. 28. See Bones.
 OSSOLI (S. Margaret Fuller), XVII. 7.
 OSSORY, see of, XIII. 84.
 OSTADE (Adrian Van), XVII. 8, 75.
 — (ISAAC VAN), XVII. 8.
 OSTASHKOV, in Russia, XVII. 8.
 Ostell (Mr), his photographic process, XVII. 548.
 OSTEND, XVII. 8—siege of, XI. 572.
 Osteogeneiosus, genus of fishes, XII. 262.
 Osteoglossum, genus of fishes, XII. 249.
 OSTEOLOGY, XVII. 9—human, III. 4—of the lower animals, 74; XXI. 557—of fishes, XII. 207. See Bones.
 Osteolepis, genus of fossil fishes, XII. 334; XVII. 123.
 Osteoplax, genus of fossil fishes, XVII. 125.
 OSTERODE, in Hanover, XVII. 9.
 OSTERVALD (Jean Frédéric), Protestant divine, XVII. 9.
 OSTIA, Italian city, XVII. 9.
 Ostian road, XIX. 228.
 Ostracian, genus of fishes, XII. 313—fossil, 338.
 Ostracionidæ, family of fishes, XII. 313; XVII. 122.
 OSTRACISM, XVII. 9; IV. 199, n. 2, 399; XVIII. 565.
 Ostracoda, fossils, XVII. 101.
 Ostrea, genus of mollusks, XV. 346—fossil, XVII. 105.
 Ostreadæ, family of mollusks, XV. 348—fossil, XVII. 105.
 Ostrich, XVI. 796; XVII. 634—African, II. 217; XVI. 270—in Arabia, III. 347—American, XVI. 796—tame ostriches, IX. 528—erroneous accounts of, by ancient authors, III. 361—respiration of, XVIII. 75.
 OSTROG, in Russia, XVII. 10.
 OSTROGOSHSK, in Russia, XVII. 10.
 Ostrogoths, X. 727, 728.
 OSTROWO, town in Prussia, XVII. 10.
 OSTUNI, town of Naples, XVII. 11.
 OSUNA, town of Spain, XVII. 11.
 OSWEGO, town in United States, XVII. 11.
 Oswell (Mr), African traveller, II. 211.
 OSWESTRY, town in Shropshire, XVII. 11.
 Osymandas, his library, XIII. 381.
 Osymandias, circle of, I. 616.
 OTAGO, XVII. 11; XVI. 235—Free Church colony at, VII. 150.
 OTATEITE, XVII. 11. See Tahiti.
 Otaria, genus of mammalia, XIV. 172—dentition of, XVI. 463.
 Otchakoff, Charles XII. at, XX. 854.
 OTHMAN (Ibn Affan), caliph, XVII. 11.
 — or Osman, founder of the Ottoman empire, XVII. 11. See Osman.
 OTHO (M. Salvius), Roman emperor, XVII. 12; XIX. 338.
 — or Otto I., the Great, XVII. 12; XII. 644.
 — or Otto II., XVII. 12; XII. 644.
 — or Otto III., XVII. 12; XII. 644.

OTH—OVA

OTHO or Otto IV., XVII. 12.
 — or Otto, of Freisingen, chronicler, XVII. 12.
 — king of Greece, XI. 30, 31.
 Otlopha, genus of reptiles, XIX. 81.
 Otiocerus, genus of insects, IX. 169.
 Otis, genus of birds, XVI. 797.
 OTLEY, in Yorkshire, XVII. 13.
 Otodus, genus of fossil fishes, XII. 341.
 Otolithus, genus of fishes, XII. 285.
 Otomi language, XIII. 221.
 OTRANTO, XVII. 13; XII. 185; XX. 242, 255.
 Ottadini, Caledonian tribe, VI. 73; XIX. 742.
 OTTAJANO, Neapolitan town, XVII. 13.
 OTTAWA, capital of Canada, XVII. 13.
 — river, XVII. 13; VI. 142, 145; XV. 521.
 Otter, XIV. 159—its teeth, XVI. 461—fur, X. 348—sea-otter, ib.
 — hound, XII. 41—hunting, 40.
 OTTLEY (William Young), XVII. 13—his history of engraving, XVIII. 522, 524 et seq.
 Otto, his obligations to Cunningham, VII. 586.
 — (M.), on the decrease of the Baltic, IV. 403.
 — of roses. See Attar.
 Ottocar, IV. 302, 310.
 Ottoman army, III. 656. See Turkey.
 Ottomans, IX. 389.
 Ottomaques, clay eaten by the, II. 693.
 Ottrelite, mineral, XV. 78.
 Otumba, in Mexico, XIV. 723—battle of, 705.
 Otus, genus of birds, XVI. 746.
 OTWAY (Thomas), tragic poet, XVII. 13; XXI. 171, 173—dramatic works of, VIII. 161.
 — (Caesar), on the linen trade of Ireland, XII. 520.
 Ouaran, reptile, XIX. 28.
 Oubliettes, XVIII. 566.
 OUDE, or Oudh, Indian province, XVII. 14; XI. 500 et seq.
 — Nabob of, XI. 500 et seq.
 Oudenarde, battle of, V. 451; IX. 369.
 Oudenodon, fossil reptiles, XVII. 142.
 OUDINOT (General), occupation of Rome by, XII. 659.
 — (Nicolas - Charles), marshal of France, XVII. 23; X. 139 et seq., 159.
 Oudney (Dr), African traveller, II. 210; VI. 752.
 Oughter (Lough), VI. 347.
 Oughterard, in Galway, X. 390.
 OUGHTRED (William), mathematician, XVII. 23—on algebra, II. 486.
 OUGLITSCH, town in Russia, XVII. 24.
 Oulstis, monkeys, XIV. 144.
 OUNDLE, in Northampton, XVII. 24.
 Oural, or Ooral Mountains. See Ural Mountains.
 Ourax, genus of birds, XVI. 785.
 OURG, or Orga, town of Mongolia, XVII. 24.
 Ourique, battle of, XVIII. 380.
 OURO PRETO, town in Brazil, XVII. 24.
 OUSE, GREAT, XVII. 24; V. 721; VI. 114; XII. 48; XVI. 289.
 — LITTLE, XVII. 24; XVI. 289.
 — river, in Sussex, XX. 839.
 — river, in Yorkshire, XVII. 24.
 Outcrop of beds, in geology, XV. 168.
 OUTLAW, XVII. 24.
 Outram (General), XVI. 307, 308, 311, 315—his Persian campaign, XVII. 443.
 Outworks, in fortification, IX. 822.
 Ouverture (Toussaint d'), XI. 256.
 Ouzel, bird, XVI. 754.
 Ova, of fishes, number in the cod, XII. 268—hatching of salmon, IX. 590; XII. 138, 139—estimate of number deposited in the Tweed, 616—of the hering, 235—of Batrachian reptiles, XIX. 74—mollusks, XV. 331, 334—changes in, after fecundation, XVII. 684.
 OVADO, in Sardinia, XVII. 24.
 Ovalo, III. 468, 476, 511.
 OVAR, Portuguese town, XVII. 24.
 Ovary, III. 70; XVII. 682.
 — of flowers, V. 118, 130.

OVA—OXA

- OVATION, XVII. 24; XXI. 354.
 OVERALL (John), bishop, XVII. 25.
 OVERBURG (Sir Thomas), XVII. 25; VII. 96.
 Overfalls, flow of water over, XII. 121, 126, 127.
 OVERFLAKKEE, island, XVII. 26.
 Overreach, in horses, XXI. 562.
 Overseers for the poor-laws, XVIII. 297.
 Overshot water-wheels, XII. 167.
 Overstone (Lord), on joint-stock banks, XV. 448—his evidence on banking, 450 n. 462, n. 2, 470 n.—on limited liability, XVII. 316—on free trade, XXI. 62.
 OVERTON, in Flint, XVII. 26.
 OVERTURE, in music, XVII. 26.
 Overweg (Dr), his discoveries in Africa, X. 478; II. 211—death, 479—his exploration of Lake Tchad, XXI. 80.
 OVERYSSEL, in Holland, XVII. 26; XI. 587.
 OVIDIUS NASO (Publius), XVII. 26—Burman's edition of, V. 788—poetry of, XVIII. 105—his description of chaos, VI. 415.
 OVIEDO, Spanish province and city, XVII. 28, 29; IV. 156—university of, XXI. 492.
 ——— VALDEZ (G. Fernandez de), XVII. 30.
 Oviparous animals, II. 772.
 Ovis, genus of mammalia, XIV. 212.
 Ovule, in botany, V. 118, 133.
 Ovulites, fossil shells, XVII. 93, 94.
 Ovulum, genus of mollusks, XV. 384.
 Ovum. See Ova, Eggs.
 Owen (Dr), on the geology of Indiana, XII. 514—of Iowa, 459, 460.
 ——— (JOHN), Puritan divine, XVII. 30—on theology, XXI. 197, 213 *et seq.*
 ——— (JOHN), epigrammatist, XVII. 33.
 ——— (Prof. Richard), on animalcules, III. 107—on the vertebrate skeleton, XII. 205—on the osteology of fishes, 208, 209—names given by him to the different parts of the skeleton of fishes, 210, n.—on ichthyology, 219 *et seq.*—his odontography, 332; XVI. 408—on the structure of teeth, 407 and n. 4 *et seq.*—on the pearly nautilus, XV. 357, 391—on the vertebral structure of the skull, XVI. 501—on the mollusca, XV. 319 *et seq.*—on a fossil reptile, XVII. 129—on the fossil animals of Australia, 638—on the distribution of fossil elephants, *ib.*—on the more speedy extinction of large than of small animals, 639—his classification of mammalia founded on the brain, XXI. 31—on zoophytes, 981—on wool, 905.
 ——— (Robert), communist, VII. 214—his observations on the effect of the manufacturing system, 215—his parallelogram at Orbeston, 216—his Book of the New Moral World, *ib.*—his manufactory at New Lanark, XIII. 174.
 ——— (WILLIAM), portrait-painter, XVII. 33.
 Owhyhee, discovery of, by Captain Cook, VII. 340—his death there, *ib.*
 Owls, XVI. 746.
 Owsjannikow on the spinal marrow, XVII. 669.
 Ox, XIV. 215; XVII. 632—ox-labour in agriculture, II. 341—Galla ox, 55—flesh of, as food, IX. 761—scriptural meaning of the term oxen, II. 249—times of appearance of the permanent teeth in, XVI. 468—chemical composition of the teeth, 418—fat of, 493—oil from the bones of the feet of, *ib.* See Bos.
 Ox-bot, XXI. 569. See Estrus.
 Oxæa, genus of insects, IX. 200.
 Oxalate of lime, its pyro-electricity, VIII. 561.
 Oxalic acid, VI. 511, 515—a poison, XIV. 435—used for discharging colours, VIII. 316—antidotes to its poisonous effects, XVIII. 134.
 Oxalidaceæ, nat. order of plants, V. 187.
 Oxalis roots, culture of, XI. 740.
 Oxalite, mineral, XV. 125.
 Oxamic acid, VI. 512.

OXE—OZE

- OXENSTIERNA (Count Axel), XVII. 33; XX. 847.
 Oxenstjerna (J. Gabriel), Swedish author, XIX. 698.
 OXFORD, XVII. 34—Oxford marbles, III. 720—libraries at, XIII. 395—university of, VIII. 745; XXI. 443, 452, 462; colleges and halls, 459; roof of the theatre at, XIX. 386; servitors at, XX. 312; examinations, IX. 924—Radcliffe observatory at, III. 817—meteorological observations at, XIV. 688—early printing at, XVIII. 534, 538—societies in, XV. 368.
 ——— clay, XV. 208.
 ——— EARL OF, XVII. 36. See Harley.
 ——— or middle oolite, XV. 206, 208.
 OXFORDSHIRE, XVII. 36—population and value of property, VIII. 754.
 OXIDATION, XVII. 37—of metals by electricity, VIII. 593.
 OXIDE, XVII. 37; VI. 483—antimony, 494—bismuth, 496—copper, 497—mercury, 498—silver, *ib.*—platinum, 499—iron, 489; cause of decay in stones, XX. 712—lead, VI. 497—manganese, 490—molybdenum, 494—tungsten, *ib.*—titanium, *ib.*—tellurium, 495—zinc, 491—tin, 493—vanadium, 494—uranium, 496. See Chemistry.
 Oxidized iron ores, XV. 107.
 ——— stones, XV. 68.
 Oxiuri, tribe of insects, IX. 193.
 Oxley (Mr), his discoveries in Australia, IV. 254, 255.
 Oxlip, plant, V. 203.
 Oxna, one of the Shetland islands, XX. 113.
 OXUS, river, XVII. 37; III. 753; V. 758; XIX. 549.
 Oxybelus, genus of insects, IX. 196.
 Oxycera, genus of insects, IX. 237.
 OXYGEN, XVII. 37; VI. 455—the most important of the elementary bodies, 438—a component part of the atmosphere, IV. 180; VI. 464; XIX. 608—specific gravity of, IV. 181; VI. 448; XII. 89—its use with hydrogen in the blow-pipe, IV. 794—effects of food containing, VIII. 24—in plants, II. 375; V. 95—its absorption by flowers, 148—combined with hydrogen, VI. 458—attraction of metals for, 483—its functions in the animal economy, 522—binary compounds of minerals with, XV. 61—combination of the non-metallic elements of minerals with, 64—as an element in the crust of the globe, XVII. 618—magnetism of, I. 981—consumed by respiration, XVII. 662—necessary to combustion, XX. 353—in the combustion of coal, 629.
 Oxyhydrogen microscope, XIV. 789, 793.
 Oxylus, VIII. 634.
 Oxymel process in photography, XVII. 549.
 Oxymuriate of potash, gunpowder from, XI. 158. See Chlorate of Potash.
 Oxymuriatic acid, or chlorine, IV. 758. See Chlorine.
 Oxyopus, genus of arachnides, III. 382.
 Oxyporus, genus of insects, IX. 103.
 Oxypterus, genus of mammalia, XIV. 228.
 Oxyrhina, genus of fishes, XII. 324, 322—fossil, 341.
 Oxyrhynchus, genus of birds, XVI. 763.
 Oxystomus, genus of fishes, XII. 229.
 Oxytelus, genus of insects, IX. 103.
 Oxyurus, zoophytes, XXI. 981.
 OYER and TERMINER, XVII. 37.
 Oyes, III. 322.
 Oyster, XV. 348, 345; IX. 765—pearl-oyster, XV. 348; of Ceylon, VI. 395—hammer-oyster, XV. 348—tree-oyster, 345—Essex oyster-fishery, IX. 336—fossil, XVII. 106, 105—Burton oyster-bed, in Clare, VI. 755.
 Oyster-catcher, bird, XVI. 797.
 OZANAM (Jacques), mathematician, XVII. 37—on dialling, VII. 776.
 Ozark Mountains, II. 675; XXI. 420.
 OZELL (John), XVII. 37.

OZE—PAG

- OZEROV (V. Alexandrovitch), tragic poet, XVII. 37.
 OZIERI, town in Sardinia, XVII. 37.
 Ozokerite, mineral, XV. 124.
 Ozone, VI. 461; VIII. 536; XIX. 608.
 Ozorius, genus of insects, IX. 104.
 OZORKOV, town in Poland, XVII. 37.
- P
- P, letter of the alphabet, XVII. 38—in abbreviations, II. 20.
 Paamyles, XI. 385.
 PACARAIMA (Sierra), in South America, XVII. 38.
 Pacas, in zoology, XIV. 189.
 PACCA (Bartolomeo), cardinal, XVII. 38.
 Paccard (Dr), his ascent of Mont Blanc, II. 627.
 PACCHIAROTTO (Jacopo), painter, XVII. 38.
 PACE, Roman measure, XVII. 38.
 PACHECO (Francisco), painter, XVII. 38—teacher and father-in-law of Velasquez, XXI. 533.
 PACHETE, in British India, XVII. 39.
 PACHOMIUS, XVII. 39; XV. 407.
 Pachycornus, genus of fossil fishes, XII. 335; XVII. 126.
 Pachydermata, XIV. 194, 196, 135; II. 774; their bones, III. 78 *et seq.*—organs of smell, 94—dentition, 32, 33; XVI. 467 *et seq.*—muscles, III. 91—olily products of, XVI. 493—of Africa, II. 217—America, 713—distribution of, XVII. 631.
 Pachygaster, genus of insects, IX. 237.
 Pachygyra, fossil corals, XVII. 97.
 Pachyptila, genus of birds, XVI. 812.
 Pachypus, genus of insects, IX. 123.
 Pachyrisma, fossil mollusks, XVII. 107.
 Pachysoma, genus of mammalia, XIV. 148.
 PACIFIC OCEAN, XVII. 39, 575, 576—temperature of, 577—equatorial currents of, 579—tides of, 581.
 Pacini (Philip), II. 816, 817.
 Pacinian corpuscula, II. 816.
 PACIOLI or Pacioli (Lucas), on algebra, XVII. 40; II. 484; X. 504.
 Pack of fox-hounds, XII. 39, 43—one first kept by Edward I., 34—expense of keeping, 38—number of, in United Kingdom, 39—pack of harriers, 42.
 Pack-horse, XI. 656.
 Packet system of postage, XVIII. 409—of United States, 427.
 PACTOLUS, river, XVII. 40; XIV. 807.
 Pacurianus, VII. 317.
 PACUVIUS (Marcus), Roman dramatist, XVII. 40.
 PADANG, in Sumatra, XVII. 41—filigree work of, IX. 579.
 PADDINGTON, XVII. 41; XIII. 664.
 Paddle-wheels, XX. 636, 656—slip of, 657—compared with the screw, 661.
 Paddock, XI. 670.
 PADERBORN, in Rhenish Prussia, XVII. 41.
 PADIHAM, in Lancashire, XVII. 41.
 PADILLA (Juan Lopez de), XVII. 41.
 ——— (DONA MARIA PACHECO DE), XVII. 41.
 PADRON, town in Spain, XVII. 42.
 PADSTOW, town in Cornwall, XVII. 42.
 PADUA, XVII. 42—Academy of Sciences at, II. 63—meteorological observations at, XIV. 670—violin school of, XXI. 29—university, 492.
 PADULA, town in Naples, XVII. 43.
 PADUS, XVII. 43. See Po.
 PÆAN, XVII. 43.
 Pæcilopoda division of crustacea, VII. 543.
 Pæciloptera, genus of insects, IX. 169.
 Pæderus, genus of insects, IX. 103.
 PÆDO-BAPTISTS, XVII. 43.
 Pæonians, XIII. 763, 764.
 PÆSTUM, XVII. 43; XV. 782; XX. 237—temples of, VI. 68.
 PAEZ (Pedro), Spanish missionary, XVII. 43.
 ——— (General), IV. 818–820.
 PAGAN (Blaise-François Comte de), XVII. 43—on fortification, IX. 814.

PAG—PAL

- Paganalia, XVII. 44.
 PAGANINI (Nicolo), violinist, XVII. 43.
 PAGANISM, XVII. 44; I. 456 *et seq.*; XII. 357—mixed with Christianity by the church of Rome, III. 311 n. 2, 314—discouragement of, in the Roman empire, XIX. 353, 364—its alleged tolerant spirit disputed, XX. 380.
 Pagans, meaning of the word, I. 456—character of their gods, 458—their use of images and pictures a cause of multiplying their gods, 465—their miracles, 466.
 Page, in chivalry, VI. 612.
 ——— commander, his survey of the river Paraguay, XVII. 603.
 ——— (David), XVII. 121.
 ——— (Mr), his mode of getting in the piers of the new bridge at Westminster, XX. 723—his method of protecting the surface of stone, 735.
 Pagellus, genus of fishes, XII. 287—fossil, 343.
 PAGGI (G. Battista), XVII. 44.
 PAGNINUS (Sanctes), XVII. 44.
 PAGO, island, XVII. 44.
 PAGODA, XVII. 44; III. 459; XIII. 15; XV. 774.
 ——— coin, XVII. 44; XV. 422.
 Pagrus, genus of fishes, XII. 287.
 Pagurus, genus of crustacea, VII. 542.
 PAHANG, in the Malay peninsula, XVII. 44.
 Pahlavi, III. 747.
 PAHLUNPORE, in India, XVII. 45.
 PAIMBEUR, town in France, XVII. 45.
 Pain, insensibility of insects to, III. 177.
 PAINE (Thomas), XVII. 45; X. 71—his work entitled Common Sense, V. 537—his Rights of Man, 543; XIII. 786.
 Paigneon, blind mathematician, IV. 778.
 PAINGTON, town in Devon, XVII. 45.
 PAINSWICK, town in Gloucestershire, XVII. 45.
 Painter's work in building, V. 757.
 ——— colic, XIV. 434.
 Painters, in Denmark, XIX. 696; Sweden, 702. See Painting.
 PAINTING, XVII. 46—ancient, XI. 345; III. 707, 708—Chinese, VI. 581—Dutch school of, III. 710; XI. 591—ancient Egyptian, VIII. 442—in Hindustan, XI. 477—academies of, at Paris, II. 67; Rome, Turin, Milan, Florence, Modena, Madrid, and Stockholm, 68; Edinburgh, VIII. 397; London, XIII. 675—American custom of painting the skin, II. 682—colours used in, VII. 152—design in, 758—painting in enamel, VIII. 654—encaustic painting, *ib.*—fresco, X. 306—mosaic imitation of, XV. 653—miniature, 249—painted glass, X. 667—in Persia, XVII. 429—painting on porcelain, XVIII. 444—qualities common to painting and poetry, 92—house painting, V. 757. See Fine Arts.
 Paintings, private collections of, in Britain, XVII. 86—prices recently paid for, *ib.*—list of Sir J. Reynolds' historical, XIX. 101, n.
 Pairing of animals, III. 181, 182.
 Paisbergite, mineral, XV. 82.
 PAISIELLO (Giovanni), XVII. 87.
 PAISLEY, XVII. 87—textile fancy goods first made at, VII. 449—cotton, woollen, and silk manufacture, XIX. 805.
 Paixhans (Col.), his guns, XI. 139.
 PAJOU (Augustin), French sculptor, XVII. 90.
 PAK PATTAN, town in India, XVII. 90.
 PAKS, town in Hungary, XVII. 90.
 Palaces, in ancient Rome, III. 470—modern Rome, XIX. 369—in London, XIII. 663, 669—palatial architecture of the Italians, III. 451—in Petersburg, XVII. 491—Vienna, XXI. 583, 585.
 Paladium, XV. 118.
 Palæaster, fossil star-fish, XVII. 99.
 Palæchinus, fossil echinoidea, XVII. 99.
 PALÆOGRAPHY, XVII. 90; III. 422.
 PALÆOLOGUS, name of Byzantine monarchs, XVII. 90; VII. 316, 318.
 Palæoniscus, genus of fossil fishes, XII. 334; XVII. 125.

PAL—PAL

PALÆONTOLOGY, of animals, XVII. 91, 637; XV. 128, 129, 194; XII. 332—in South America, II. 670; XVII. 609—Brazil, V. 233—Siberia, XII. 664—Isle of Man, XIV. 244—polar regions, XVIII. 180—Russia, XIX. 517—Scotland, 791, 793—crustacea, VII. 540—foraminifera, XXI. 1007; XVII. 93—of plants, V. 232; XVII. 640.

Palæophis, fossil serpents, XVII. 153.

Palæophrynos, fossil batrachia, XVII. 152.

Palæophytology, V. 232.

Palæorhynchum, fossil fishes, XII. 346.

Palæornis, genus of birds, XVI. 781.

Palæosaurus, fossil reptiles, XVII. 141.

Palæospongia, fossil sponges, XVII. 92.

Palæotherium, XVII. 163; XVI. 125—teeth of, 465.

Palæozoic epoch, in geology, XV. 195, 196; XVII. 92, 587—rocks, in Germany, X. 584—fossils, XVII. 96 *et seq.*—rocks of Scotland, XIX. 790—Spain, XX. 484.

Palæozoology, V. 232.

Palæphatus, XIX. 827.

PALÆSTRA, XVII. 176; XI. 168.

Palætyrus, city of, XXI. 404.

PALAFIX-Y-MELZI (Don José), Spanish patriot, XVII. 176.

Palagonite, mineral, XV. 73.

PALAIS (Le), town in France, XVII. 177.

PALAMAS (Gregorius), XVII. 177.

Palamedea, genus of birds, XVI. 806.

PALAMOW, in Bengal, XVII. 177.

Palapteryx, fossil birds, XVII. 155.

Palarnus, genus of insects, IX. 195.

Palate, bones of, III. 23—muscles, 39—soft palate, 48.

PALATINATE, XVII. 177; IV. 518.

Palatine hill, XIX. 356, 357.

PALAWAN, island, XVII. 177.

PALAZZUOLO, town in Sicily, XVII. 177.

Pale, in heraldry, XI. 327.

Paleæ, in botany, V. 125, 215.

PALEMBANG, in Sumatra, XVII. 177; XX. 803, 806—tin found near, 804.

PALENCIA, in Spain, XVII. 178.

Palenque, ruins of, II. 697; XIV. 719, 721.

PALERMO, XVII. 178; XX. 243, 255—mortality in, XV. 625—commotions at, in 1848, XII. 657—university of, XXI. 492.

Paleryx, fossil serpent, XVII. 153.

PALES, Roman divinity, XVII. 179.

PALESTINE, XVII. 180; XX. 901, 905—Saladin's conquests in, VIII. 480—climate of, XX. 906, 907—inhabitants, 907—religious sects, *ib.*, *et seq.* Map of, XVII. Pl. See Canaan, Crusades, &c.

PALESTRINA (G. Pierluigi da), musician, XVII. 198.

—town in the Papal States, XVII. 199; XVIII. 448.

Palette water-wheel, XII. 183.

PALEY (William), D.D., XVII. 199—on Tucker's writings, I. 114, *n.*—disputed the existence of a moral faculty, 225 and *n.*—followed the opinions of Bishop Law, 226, *n.*—his analysis of virtue, 301—on the nature of our pleasures, 303, 304—his Moral Philosophy, 307, 389; copyright of, VII. 356—on the moral sense, I. 314—one of the brightest ornaments of the English Church in the eighteenth century, 388—did not owe his system to Hume, *ib.*—fitter for business than philosophy, *ib.*—his genius and political bent, *ib.*—his style, *ib.*—his works, *ib.*—on virtue, 390; happiness, *ib.*—erroneous views on honour, *ib.*—occasionally a lax moralist, 391—his political and ecclesiastical views, 392—on instinct, 225—on divorce, VIII. 67—on the character of reformers, IX. 321, *n.* 3—his Natural Theology partly plagiarised, XVI. 263—on the credibility of miracles, XV. 264—on rights, XIX. 172, 173—on the noxious nature of tithes, XXI. 64—on different kinds of occupation, 674.

Palfyn on anatomy, II. 766.

Palgrave (Sir F.), on the Anglo-Saxon militia, XV. 6, 7—on Ingulphus' History of the Monastery of Crowland,

PAL—PAL

XII. 381—on the rapes of Sussex, XX. 838.

Pali language, study of, XVII. 530.

PALIANO, town in the Papal States, XVII. 206.

Palikars of Greece, XI. 14.

Palimphytes, genus of fossil fishes, XII. 345.

PALIMPSESTS, XVII. 207; IV. 705—Cicero de Republica, VI. 721—Mai's discoveries in, XIV. 95, 96—discovery of parts of the Theodosian Code, VI. 744—Parisian, or Codex Ephraïmi, XIX. 838.

PALINDROMUS, XVII. 215.

Palingenesis of plants, III. 313.

PALINODE, XVII. 216.

Palinuro, XX. 241.

PALINURUS, XVII. 216—genus of fishes, XII. 297.

—vulgaris, VII. 542.

Palisades, in fortification, IX. 798 *et seq.*

Palisot (Baron de Beauvois), his work on insects, IX. 11—on rattlesnakes, XIX. 69.

PALISSY (Bernard), XVII. 216; XVIII. 432—his ware, *ib.*

Palla, ancient robe, XVII. 219.

PALLADIO (Andrea), XVII. 216—his architectural publications and works, III. 451, 452—his designs of the orders of architecture, 478.

PALLADIUM, statue, XVII. 217.

—a metal, XVII. 217, 622; VI. 499—specific gravity of, XII. 88—native, XV. 113.

PALLADIUS, Greek medical writer, XVII. 217.

—bishop, XVII. 217—his mission to Ireland, XII. 465.

—(R. T. ÆMILIANUS), XVII. 217.

PALLAS, goddess, XVII. 217. See Minerva.

—(PETER SIMON), XVII. 217—his works on insects, IX. 6—on ornithology, XVI. 728—on the Deluge, VII. 722—philology advanced by, XVII. 528.

—planet, IV. 67—discovery of, 68; III. 808.

Pallavicino (Cardinal), his History of the Council of Trent, I. 437.

—(FERRANTE), XVII. 219.

—an irrigator of land, XII. 622.

PALLEE, town in India, XVII. 219.

Pallets of clocks, VII. 7 *et seq.*

Palliser (Sir Hugh), IV. 419; V. 485—his dispute with Keppel, 486.

PALLIUM, robe, XVII. 219, 220.

PALM, XVII. 220—structure of the stem, V. 83—mode of growth, 84—region where palms predominate, 223—date, 213—fan, *ib.*—dwarf fan, 214—ivory, *ib.*—sago, *ib.*—in Palestine, XVII. 190—Palmyra palm, in Ceylon, VI. 394—distribution of palms, XVII. 626 *et seq.*; V. 228—silicified trunks of, 641—an emblem of victory, 220.

—oil, XVII. 220; XVI. 494—tree yielding, II. 226—trade, in Guinea, XI. 89.

Palm-house at Kew, XIII. 75.

PALM-SUNDAY, XVII. 220.

Palmae, or Palm, order of plants, V. 213.

Palma Christi, VI. 328—new silkworm fed on, in Jamaica, XII. 681.

—(GIACOPO), the Old, painter, XVII. 220.

—(GIACOPO), the Young, painter, XVII. 220.

—island, VI. 166; volcano in, XXI. 605.

—town in Majorca, XIV. 102.

—town of Naples, XVII. 220.

—town in Spain, XVII. 220.

—town of Sicily, XVII. 220; XX. 245.

PALMAS (las), town in Grand Canary, XVII. 221; VI. 166.

—(Cape), Maryland colony on, XIII. 360.

Palmblad, Swedish author, XIX. 700.

Palmer (F.), convicted of sedition, V. 550.

—(John), his mail-coach system of conveying letters, XVIII. 407—increase of revenue from, 408.

—on liturgies, XIII. 516.

PAL—PAN

Palmer (Mr), engravings copied by, XXI. 636.

—worm, as bait, III. 155.

Palmerston (Lord), dismissal from the Foreign Office, V. 672—his remonstrance against the extinction of Cracow, VII. 475—his negotiations with France on the Eastern question, X. 215—his letter to Lord Normanby, 226—Sir Robert Peel's opposition to his foreign policy, XVII. 365.

PALMI, town of Naples, XVII. 221.

Palmieri (M.), on the electricity of clouds, VIII. 582.

Palmipedes, order of birds, XVI. 808.

PALMUS, a measure, XVII. 221.

PALMYRA, XVII. 221; VII. 186; XX. 904, 910—ruins of, III. 470—conquered by Aurelian, XIX. 349.

—genus of annelides, XI. 299.

—palm, in Ceylon, VI. 394.

Palmyrene, Syrian province, XX. 904.

PALO, town of Naples, XVII. 223.

Palolo, species of annelide, XI. 297.

PALOMAR (San Andres de), town in Spain, XVII. 223.

PALOMINO DE CASTRO Y VELASCO (A. Antonio), XVII. 223.

PALOS, town in Spain, XVII. 224.

PALOTA, town in Hungary, XVII. 224.

Palpatores, tribe of insects, IX. 112.

Palpicornes, family of insects, IX. 116.

Palpimanus, genus of arachnides, III. 383.

Palsy, in the domestic animals, XXI. 575. See Paralysis.

PALU, town in Turkey, XVII. 224.

PALUDAMENTUM, XVII. 224.

Paludicellea, zoophytes, XXI. 1001.

Paludina, genus of mollusks, XV. 382—fossil, XVII. 110.

Paludinidæ, family of mollusks, XV. 382.

Pamborus, genus of insects, IX. 96.

Pambour (M. de), on the theory of locomotives, I. 886.

PAMIERS, town in France, XVII. 224.

PAMIR, in Asia, XVII. 224.

Pampa tribes, in ethnology, IX. 349.

PAMPAS of South America, XVII. 224, 608; II. 668; III. 129—of La Plata, XVII. 776.

—DEL SACRAMENTO, in Peru, XVII. 224.

Pamphilia, silk first woven by, XX. 286.

PAMPHILUS, XVII. 224.

—painter, XVII. 224, 54.

—genus of insects, IX. 184.

Pamphlets, XVI. 181.

Pamphractus, genus of fossil fishes, XII. 339.

PAMPHYLLIA, XVII. 224—coins of, XVI. 377.

PAMPLONA, city in Spain, XVII. 225; XV. 831, 832.

PAN, heathen god, XVII. 225; I. 458—grotto of, IV. 169.

—(Mallet du), XVI. 197.

PANÆNUS, Greek painter, XVII. 226, 53.

PANÆTIUS, Stoic, XVII. 226.

Panagæus, genus of insects, IX. 94.

PANAMA, town in New Granada, XVII. 226; X. 796, 797.

—taken by the bucaniers, V. 711—pearls from, XVII. 357.

—ISTHMUS OF, XVII. 226—proposed canal across, II. 711.

PANAON, island, XVII. 226.

Panaria, island, XIII. 502.

PANATHENÆA, festival, XVII. 226.

PANAULON, XVII. 227.

PANAY, island, XVII. 227.

Panchax, genus of fishes, XII. 253.

Panchperee, Indian tribe, IV. 525.

Panckoucke (M.), French journalist, XVI. 197.

PANCRAS (St), parish of, XVII. 227.

PANCRATIUM, athletic game, XVII. 227.

Pancreas, anatomy of the, III. 62.

Pancreatic juice, II. 782; VI. 523; XVII. 660.

PANCSOVA, town in Austria, XVII. 227.

Pandanaceæ, nat. order of plants, V. 214.

PANDECTS, XVII. 227; VI. 746; XIII. 28, 272—story of their discovery at Amalfi, II. 647; VI. 747—Cunningham's meditated edition of the, VII. 586.

PAN—PAP

Pandects, translations of Greek medical works, XIV. 456.

Pander (Dr C. H.), on fossil fishes, XVII. 115.

Pandion, genus of birds, XVI. 742.

PANDORA, XVII. 227.

—genus of mollusks, XV. 350—fossil, XVII. 108.

PANEEPUT, in India, XVII. 227.

PANEGYRIC, XVII. 227—panegyric periods, VIII. 451—royal, 452.

Paniconography, XVIII. 555.

PANEL, XVII. 228—in architecture, III. 511—in joinery, V. 751; XII. 810.

Pangasius, genus of fishes, XII. 262.

Pangolin, in zoology, XVI. 192; XVII. 638.

Pangonia, genus of insects, IX. 231.

Paniany, Indian town, XI. 493.

Panic. See Pan.

Panicle, in botany, V. 115.

Pānini, Sanscrit grammarian, XVII. 519.

PANIONIA, festival, XVII. 228.

Panizzi (Mr), on the British Museum, XIII. 391, 393.

PANMELODICON, XVII. 228.

Pannartz, early printer, XVIII. 532.

PANNINI (G. Paolo), painter, XVII. 228.

Panniput, battle of, XI. 481.

PANNONIA, XVII. 228.

Panopœa, genus of mollusks, XV. 350—fossil, XVII. 108.

PANORAMA, XVII. 228.

PANORMUS, XVII. 229, 178.

Panorpa, genus of insects, IX. 178.

Panorpatae, insects, IX. 177.

Pansy, V. 93.

PANTALONE, musical instrument, XVII. 229.

PANTELLARIA, island, XVII. 229; XX. 246.

PANTHEISM, XVII. 229; XXI. 185—pantheistic hypothesis on the origin of evil, IX. 421—of Pythagoras, XVIII. 711—Spinoza, XX. 515.

PANTHEON of Rome, XVII. 238; XIX. 360 *et seq.*—its architecture, III. 469, 470.

—in Paris, XVII. 283.

Panther, XIV. 169.

PANTICAPÆUM, XVII. 238; XIII. 75.

PANTOGRAPH, XVII. 238; VI. 119.

PANTOMIME, XVII. 238—use of, as the native language of the deaf and dumb, VII. 677, 679—among the Romans, IV. 398.

PANUCO, town in Mexico, XVII. 239.

Panurgus, genus of insects, IX. 199.

PANVINIO (Onufrio), antiquary, XVII. 239.

Panzer (G. W. F.), his entomological works, IX. 10.

—(S. W.), on early printed books, IV. 709.

PAOLA, town of Naples, XVII. 239.

PAOLI (Pasquale), XVII. 239—Boswell's visit to, V. 63.

—(CLEMENS), XVII. 240.

PAOLO VERONESE, XVII. 240; VI. 59; III. 710—character of his paintings, XVII. 71. See Cagliari.

PAOU, island, XVII. 240.

—Egyptian king, VIII. 455.

PAPA, town in Hungary, XVII. 240.

PAPAL STATES, XVII. 240—weights and measures, XXI. 812.

—schismatic churches, in Syria, XX. 909.

—orders of knighthood, XIII. 122.

Papaveraceæ, nat. order of plants, V. 182.

Papaw tree, V. 193; XVII. 628.

Papayaceæ, nat. order of plants, V. 193.

PAPENBURG, in Hanover, XVII. 245.

PAPER, XVII. 246—of books, IV. 705—mode of whitening and cleaning, 771—ancient, VIII. 42—for drawing, 174—filtering, IX. 583—for writing on, with colourless ink, XII. 383—Japanese, 694—bleaching of rags for, IV. 770—kind used by the early Mentz printers, XVIII. 530; Scotland, XIX. 806—manufacture of, in England, VIII. 731, *n.* 1; France, X. 256; Holland, XI. 583; near Edinburgh, VIII. 409—first paper-mill in England, XIII. 110—for photographic

PAP—PAR

purposes, XVII. 552—leaves of the Tall-pat palm used for, XXI. 8—excise duties on, 59. See Papyrus.

PAPER-MONEY, XVII. 261. See Money.

PAPHLAGONIA, XVII. 261—coins of, XVI. 374.

PAPHOS, ancient cities, XVII. 261.

PAPIAS, ancient bishop, XVII. 261—on the Gospel of St Matthew, XIV. 356.

PAPIER MACHÉ, XVII. 261—trade in, at Birmingham, IV. 732—japanning of, XII. 699.

Papilio, genus of insects, IX. 207.

Papilionaceous plants, V. 124, 190.

Papillæ, II. 816—of the tongue, in man, III. 49; in the lower animals, 100.

Papillon (John Michael), wood-engraver, XXI. 904.

Papillone, in heraldry, XI. 330.

Papin (Dr), on transmission of force through air in pipes, XVIII. 61.

— (Denys), his digester, I. 770—his steam-engine, XX. 574, 577—his suggestion of steam navigation, 636.

Papineau, Canadian agitator, V. 665.

PAPINIANUS (Æmilius), jurist, XVII. 262.

Papists. See Pope, Popery, Roman Catholics, Roman Catholic Church, Roman Catholicism.

Papous, II. 776.

Pappal, in Borneo, V. 47.

Pappenheim (General), XX. 849, 850, 851.

PAPPUS of Alexandria, XVII. 262; X. 502—his solution of the trisection of an arc, III. 145—on the works and character of Apollonius, 300—parts of Apollonius preserved by, VII. 250—MSS. of his works, X. 502—on porisms, XVIII. 360.

Papremis, battle of, VIII. 466.

PAPUA, or New Guinea, XVII. 262; IV. 262, 263—Papous, or Papuans, II. 776—degraded state of the aborigines, I. 450.

PAPYRUS, XVII. 262; VIII. 431, 441; II. 216; XVI. 270—paper made from, XVII. 246—papyri found at Herculaneum, VII. 672; XI. 345; XV. 781—Gnostic papyrus of Leyden, XI. 377—Marini on ancient papyri, XIV. 305—palimpsests of, XVII. 207.

Par of exchange, IX. 431.

PARA, province, XVII. 266; V. 295.

— (Rio da), XVII. 603.

— southern arm of the Amazon, XVII. 266.

— town in Brazil, XVII. 265.

PARABLE, XVII. 266.

Parabola, VII. 252; X. 544, 552—mensuration of, XIV. 519—parabolic theory of gunnery, XI. 116—its use in masonry, XX. 726—how to describe a, ib.

Parabolic-trumpet, XXI. 361.

Paraboloid, X. 559—mensuration of, XIV. 520—paraboloidal mirrors, XIII. 468, 469.

PARACELSUS (P. A. T.), XVII. 266; XIV. 460—character of, I. 18—his application of chemistry to pharmacy, 570—on demons, III. 309, *n.*—his use of the magnet in curing disease, XX. 414.

Paracentesis, in animals, XXI. 573.

Parachute, II. 179—theory of, 180.

Parades, in fencing, IX. 503.

Paradis (Mle.), IV. 781—Mesmer's treatment of her case, XX. 417; XIV. 547.

PARADISE, XVII. 267; XXI. 194—Mohammedan, XV. 303. See Eden.

— birds of, XVI. 765; IV. 264; XVII. 633.

Paradisea, genus of birds, XVI. 765.

PARADOX, XVII. 267.

Paradoxurus, genus of mammalia, XIV. 166.

PARAFFINE, XVII. 267, 359; VI. 506, 511; VII. 473, 506; X. 434.

Paragenesis of minerals, XV. 130, *n.*

Paragonite, mineral, XV. 78.

Paragrees, VIII. 586.

Paragua, island, XVII. 177.

PARAGUANA, in Venezuela, XVII. 267.

PARAGUAY, XVII. 267; II. 704—Indians of, 691—complexion of the natives, 694—means adopted by the Jesuits to im-

PAR—PAR

prove them, 691, 692—Jesuits in, XII. 755—tea, IV. 827; V. 199; XVII. 629. See Maté.

PARAGUAY RIVER, XVII. 269, 603, 782; II. 673.

Paragus, genus of insects, IX. 239.

PARAHIBA, Paraiba, or Parnahyba do Norte, in Brazil, XVII. 269; XIX. 174—population, V. 295.

— river in Brazil, XVII. 269.

PARAHIBA-DO-SUL, Brazilian river, XVII. 269.

Paralepis, genus of fishes, XII. 248.

PARALLAX, XVII. 269; II. 36—explanation of, IV. 7, 8—solar, 20; I. 787—lunar, ib.; IV. 33, 130—of stars, I. 841, 864; IV. 81, 96—planets, 62—Mars, ib.—mode of computing, 115, 116, 117.

PARALLEL, XVII. 269—lines, X. 512, 532—how to draw them, 526.

— motion of steam-engine, XX. 591 *et seq.*

PARALLELOGRAM, XVII. 267; X. 508, 513, 520—how to construct one, 526—to find the area of, XIV. 502.

— of forces, VIII. 333—some special uses of, 339.

PARALLOPIPED, XVII. 269; X. 535—measurement of, XIV. 505—of forces, VIII. 339.

PARALLELS of Latitude, XVII. 269; X. 480—of altitude, XVII. 269—of declination, ib.; IV. 2.

PARALOGISM, XVII. 269.

PARALYSIS, XVII. 269, 700—in the insane, XIV. 534.

Paramæcium, genus of animalcules, III. 201.

PARAMARIBO, XVII. 269; XI. 84.

PARAMATTA, town in New South Wales, XVII. 269.

Parameters, VII. 278—variation of, I. 810.

Paramos, or narrow plateaus in Venezuela, XXI. 535.

PARAMYTHIA, town in Turkey, XVII. 269.

Parana, city, XVII. 779.

— province, V. 295.

— river, XVII. 270, 267, 603, 782.

PARANAGUA, town in Brazil, XVII. 270.

Paranahyba, river, XVII. 603.

Parandra, genus of insects, IX. 144.

PARAPET, in architecture, XVII. 270; III. 482, 488, 511—in fortification, IX. 797 *et seq.*

PARAPHERNALIA, XVII. 270.

PARAPHRASE, XVII. 270.

Paraphyses, in botany, V. 142.

Paraplegia, XVII. 700.

PARASANG, measure, XVII. 270; XVI. 276 and *n.*

PARASCENIUM, XVII. 270; III. 511.

Parasita, order of insects, IX. 26, 261.

PARASITE, XVII. 270.

— mineral, XV. 100.

PARASITES, or Parasitic plants, XVII. 272, 697; V. 101, 221—parasitic growths, in pathology, XVII. 691, 697—parasitic animals, ib.; insects, IX. 182, 184, 220, 261.

Parasmilia, fossil corals, XVII. 97.

Parastas, in architecture, III. 511.

PARATI, town in Brazil, XVII. 272.

Paravey (De), his work on the silkworm, IX. 23.

PARCÆ, the Fates, XVII. 272.

PARCHIM, town in Mecklenburg-Schwerin, XVII. 272.

PARCHMENT, XVII. 272.

Pardalotus, genus of birds, XVI. 748.

Pardessus (M.), on insurance, XII. 393.

Pardies (Ignatius Gaston), I. 667.

PARDON, XVII. 273—royal prerogative of, VIII. 788, 792.

PARDUBITZ, town in Bohemia, XVII. 273.

PARÉ (Ambroise), XVII. 273—on legal medicine, XIV. 422—his surgical skill and improvements, XX. 817.

PARADES-DE-NAVA, town in Spain, XVII. 273.

PAREJA (Juan de), painter, XVII. 273.

Parenchyma, V. 66, 87; II. 806.

Parenchymateux, entozoa, XXI. 982.

Parent (Mr), on the strength of materials, XX. 757, 759.

PAR—PAR

PARENT AND CHILD, XVII. 273—duties of, 274, 276; XV. 568—parental affection of brutes, V. 703.

PARENT - DUCHATELET (A. J. Baptiste), XVII. 276.

Parenthesis, XVIII. 685.

Parexus, genus of fossil fishes, XVII. 117.

PARGA, town in Turkey, XVII. 276.

Pargasite, mineral, XV. 81.

PARHELIA, XVII. 277; XIV. 681; XVI. 688—colours of, VI. 645—of the planets, IV. 62.

PARIA, Gulf of, XVII. 277.

PARIAN CHRONICLE, XVII. 277; III. 720.

PARIAS, or Pariahs, Hindu race, XVII. 277; V. 269.

Parietal bones of man, III. 19—of the other mammalia, 77.

PARIMA (Sierra), XVII. 277; XVI. 716.

Parimé (Cordillera of), II. 669; XVII. 594—geology of, II. 670.

Paring plough, II. 271—paring land, 288, 359.

PARINI (Giuseppe), Italian poet, XVII. 277.

PARIS, XVII. 277—Chirurgical Academy of, II. 62—Royal Academy of Sciences, 63—Academy of Painting and Sculpture, 67—academies of music, architecture, dancing, and medals, 68, 69; of politics, 71—abattoirs of, 11—first ascent of a balloon at, 175—prevalence of the crime of poisoning in, from 1670 to 1680, III. 330—dome of the Halle du Bled, 414; XIX. 388—architecture of public buildings, III. 453—observatory of, 819—institution for the blind, IV. 778—entered by the allies in 1814, X. 168; and in 1815, 174—treaty of, 176; V. 614—catacombs, VI. 330—deaf and dumb asylum, VII. 686—dramatic criticism in, VIII. 156—Pont du Louvre, XII. 580; d'Austerlitz, ib., 581—fortifications of, X. 216, 217—disturbances at, in 1834, 210—patron saint of, 449—population, 277—construction of floors in, VII. 331, 332—libraries, XIII. 406, 408—variation of the needle, 53, 54; and its dip, 59—barometric pressure, XIV. 668—eocene rocks, XV. 212—births, deaths, &c., 618, 619—newspapers, XVI. 196 *et seq.*—statistics of the press of, 199, 200—Great Exhibition of 1855, IX. 454—Queen Victoria's visit to, X. 238—length of the pendulum at, XVII. 384—Arc de Carrousel, and Arc d'Etoile, III. 418, 419—work-houses first established in, XVIII. 185—police of, 184 *et seq.*—early printing at, 533—iron railway-roofs at, XIX. 397, 398—magnetism in, XX. 418, 419—Magnetic Society of, 425—suicides in, 800—duties on fish sold in, XXI. 72—consumption of tea in, 91—university of, 444—measures, 805—weights, 806—Sorbonne, 447—Wellington's visits to, 827, 828.

— (Dr), on the use of salt, XXI. 974.

— (JOHN AYTON), physician, XVII. 285.

— (MATTHEW), English chronicler, XVII. 285.

— (Plaster of). See Gypsum, and Plaster of Paris.

— Roman actor, VIII. 142.

— son of Priam, XVII. 285; XVIII. 100.

PARISH, XVII. 286—Scotch, XIX. 749—parish churches in Scotland, XVIII. 493, 494—English parishes, VIII. 719; union of, for the administration of the poor-laws, XVIII. 312.

— (Sir Woodbine), on Buenos Ayres, V. 726—on the occurrence of meteoric iron, XVII. 620.

PARISH-CLERK, XVII. 286.

Parish-registers, XV. 600; XVIII. 839.

Park, XX. 210, *n.* See Parks.

— (MUNGO), African traveller, XVII. 286; X. 477—his African discoveries, II. 210—literary aid of Bryan Edwards to, VIII. 414—extract from his travels on the standard of value, XV. 420, *n.*

PAR—PAR

his discovery of the course of the Niger, XVI. 265—on the fondness of the Africans for salt, XIX. 582.

PARKER (Matthew), archbishop of Canterbury, XVII. 287—his English Bible, IV. 703.

— (Peter), printer, XVIII. 538.

— (Richard), mutiny of, V. 560.

— (Sir Hyde), V. 484, 493—his expedition against Copenhagen, 579; XVI. 136.

— (W. K.), on the foraminifera, XVII. 94.

Parker's burning-lens, VI. 14, 15; XI. 275.

— cement, V. 742; XX. 714.

— economic lamp, XIII. 172.

Parkes (Mr), on the increased temperature of the soil from draining, VIII. 131.

— on bleaching, IV. 757, 758.

PARKGATE, town in Cheshire, XVII. 288.

PARKHURST (John), lexicographer, XVII. 288.

— prison at, XVIII. 583.

Parks, public, of London, XIII. 667—Stirling, XX. 701—Stockholm, 705.

PARLIAMENT, XVII. 288—English, VIII. 758 *et seq.*—bill in, IV. 723—Septennial Act, V. 455—attempt to repeal that act, 458—prosecution of printers in 1771 for publishing debates, 473—its right to advise the sovereign as to peace and war, 499—Pitt's plan for reform of, 507, 515—Hood's motion for reform, 536—societies of the "Friends of the People" for procuring reform, 542, 545—Mr Grey's motions for reform, 542, 549—effect of the French Revolution in extending the desire for reform, 545—first meeting of the imperial parliament, 577—agitation for reform, 625, 656, 659—bills for reform, 630, 632, 635, 637, 657, 660—passing of the Reform Act, 663—advantages and disadvantages of parliamentary government, XVII. 733—members' privilege of franking letters, XVIII. 405; their abuse of, V. 468; abolished, XVIII. 411—Long, VII. 510—Mad, VIII. 679—Rump, XIII. 165; V. 411—admission of Jews into, XII. 783; V. 672—journals of, first commenced in 1607, 381—acts of, to regulate the United States, XXI. 435—Horne Tooke's exertions to procure the publication of debates, 308—origin of parliamentary reporting, XVI. 185.

— House, Edinburgh, VIII. 395—roof of, XIX. 393.

— new houses of. See Westminster (New Palace).

— Prussian, XVIII. 673—of the Two Sicilies, XX. 251.

Parliamentary papers and notices, transmission of, by post, XVIII. 417.

— reports, origin of, XVI. 185.

PARMA, city, XVII. 302—school of painting, 72—weights and measures of, XXI. 812—university of, 492.

— (Duchy of), XVII. 302.

— (Duke of), his operations in Holland, XI. 570.

Parnacella, genus of mollusks, XV. 374.

PARMENIDES, Greek philosopher, XVII. 303.

PARMENIO, XVII. 303; XIII. 766.

Parmesan cheese, XIII. 550, 651.

PARMIGIANO, Italian painter, XVII. 303; VIII. 800—his style of painting, XVII. 72.

PARNAHIBA, town in Brazil, XVII. 303, 705—river, ib.

Parnassius, genus of insects, IX. 207.

PARNASSUS, mountain, XVII. 303; XI. 12—geology of, 11—height of, XVII. 642.

PARNELL (Sir Henry), Lord Congleton, XVII. 304—on banking in Ireland, XV. 487.

— (THOMAS), D.D., poet, XVII. 304.

Parnell's locks, XIII. 538, 539.

Parnopes, genus of insects, IX. 193.

Parnus, genus of insects, IX. 116.

PARNY (E. D. Desforges), Vicomte de, XVII. 304.

PAR—PAR

- Paro, river, IV. 822.
 Parochial libraries, XIII. 407.
 Parodon, genus of fishes, XII. 246.
 PARODY, XVII. 304.
 PAROL, XVII. 305.
 PAROLE, XVII. 305.
 Paronychiaceæ, nat. order of plants, V. 193.
 Paropamisans, in ethnology, IX. 346.
 Paropsis, genus of insects, IX. 149.
 — genus of fishes, XII. 297.
 PAROS, island, XVII. 305—Parian Chronicle, III. 720—marble of, XI. 14; XIX. 843.
 Parotia, genus of birds, XVI. 768.
 Parotid gland, III. 49—disease of, in horses, XXI. 564.
 PARR (Catherine), queen of England, XVII. 305; VIII. 705.
 — (Dr), on rheumatism, XIX. 142.
 — (SAMUEL), XVII. 305—his charge of plagiarism against Dr Middleton, IV. 637, n. 4—his edition of Bellenden, 636—his commendation of Malcolm Laing's History, XIII. 158—his friendship with Roscoe, XIX. 417.
 — young of the salmon, III. 152; IX. 591; XII. 239—constitution of the male, IX. 594—their identity with smolts, 591.
 Parra, genus of birds, XVI. 806.
 Parrakeets, birds, XVI. 782.
 Parret, river, XXI. 410.
 Parrhasiana, II. 738.
 PARRHASIUS, XVII. 306; XXI. 971—paintings of, XVII. 54.
 Parrot, XVI. 783; XVII. 633—parrots in India, XI. 456.
 Parry (Dr), on the pulse, IV. 501, 502—his experiments on wool, XXI. 905.
 — (Prof.), his filter, IX. 581.
 — (Sir Wm. Edward), XVII. 306—his arctic voyages, X. 473; XVIII. 171 *et seq.*—on winter in Greenland, XI. 42—on aurora, IV. 249—on the temperature of the arctic regions, VI. 770—on Barlow's correcting plate, XIV. 9.
 Parseism, IX. 420.
 Parsees, or Persees, XI. 92, 464—their language, XIII. 208—mythology, VII. 718.
 Parseval-Deschênes, French admiral, XIX. 502.
 Parsimony, in what respects necessary, XVIII. 234.
 Parsley, V. 195—culture of, XI. 744—victors at the Isthmian games crowned with, XVI. 366.
 Parsnip, V. 195; IX. 760—culture of, II. 321; XI. 740.
 PARSON AND VICAR, XVII. 309—constitute a corporation sole, VII. 413—English parsons, VIII. 743. See Benefice.
 Parsons (Mr), his experiments on the fastening of ships, XX. 188.
 — (Sir William), XII. 480.
 PARSONSTOWN, town in King's County, XVII. 309; XIII. 93.
 Parthenogenesis, XVII. 688.
 PARTHENON, XVII. 309; III. 461, 503, 514, 515; IV. 166, 167, n. 1—destruction of the, 173—sculptures of Phidias on, XIX. 855.
 Parthenope, planet, IV. 91.
 PARTHIA, XVII. 310—monarchy of, XV. 414—coins, XVI. 390—revolution in, XIX. 347—its wars with the Romans, 325, 334, 344, 346.
 Participles, X. 772, 790—in Egyptian grammar, XI. 428.
 PARTICK, village in Lanarkshire, XVII. 313.
 Particles, in Egyptian grammar, XI. 428.
 — of bodies, acted on by attractions and repulsions, XX. 750—kept in their places by balance of forces, *ib.*—forces which connect them change by a change of distance, 752.
 Partition, in music, XIX. 738; XV. 740, 741. See Score.
 Partitions of timber, V. 749.
 Partners, in ship-building, XX. 190.
 PARTNERSHIP, LIMITED AND UNLIMITED LIABILITY, XVII. 313. See Liability.

PAR—PAT

- Partridges, XV. 791; IX. 762—tunnel net for entrapping, XIX. 92—partridge-shooting, XX. 221.
 Parturition, XIV. 426—time of, in different animals, III. 182. See Gestation, Midwifery.
 Parus, genus of birds, XVI. 759.
 Parys, copper-mine of, II. 146.
 PAS-DE-CALAIS, XVII. 331.
 PASCAL (Blaise), XVII. 323—his Provincial Letters, I. 81, 82—his Thoughts on Religion, 82—on pneumatics, IV. 450, 451; XVIII. 26, 27—on hydrodynamics, XII. 70—his theorem, X. 550—on the power of truth, XIII. 368—on probability, XVIII. 588.
 — I., pope, XVII. 331.
 — II., pope, XVII. 331.
 Pasco, table land of, XVII. 470.
 — town in Peru, XVII. 331, 474. See Cerro di Pasco.
 PASCUARO, town in Mexico, XVII. 331.
 PASEWALK, town in Prussia, XVII. 332.
 Pashá, or Pachá, IV. 484; XXI. 380—Turkish pashas in Egypt, VIII. 487.
 Pasht, Egyptian deity, VIII. 437—the hieroglyphic name of Bubastis, V. 707.
 PASIGRAPHY, XVII. 332.
 PASIPHËE, XVII. 332; XV. 251.
 Pasis, or Pausies, Indian tribe, XVII. 18.
 Pasites, genus of insects, IX. 200.
 PASKIEWITCH (I. Fredorovitch), field-marshal, XVII. 332; XIX. 496 *et seq.*—his invasion of Hungary, IV. 308; XII. 25.
 Pasley (Sir Charles), on fortification, IX. 819.
 Pasquier (Baron), X. 175, 177 *et seq.*—on the want of instruction in the principles of government, VII. 603, n.—police of Paris under, XVIII. 188.
 PASQUIN, XVII. 332.
 PASS, or Passage, in fencing, XVII. 332.
 PASSAGE, town in Cork, XVII. 332.
 Passaic river, falls of, XVI. 175; XVII. 339.
 Passalus, genus of insects, IX. 128.
 PASSAMAQUODDY BAY, XVII. 332.
 Passandra, genus of insects, IX. 83.
 PASSANT, in heraldry, XVII. 332; XI. 331, 332.
 Passaro (Cape), in Sicily, XX. 244.
 PASSAU, in Bavaria, XVII. 332—treaty of, X. 579.
 Passemant on marine barometers, IV. 458.
 PASSERI (G. Battista), XVII. 333.
 Passerini (Carlo), his work on insects, IX. 23.
 PASSERONI (Gian Carlo), poet, XVII. 333.
 Passes across the Alps, II. 625.
 Passifloraceæ, nat. order of plants, V. 193.
 PASSIGNANO, painter, XVII. 333.
 Passion, distinguished from conscience, I. 426—figurative language appropriate to give expression to, VII. 220—natural expression of, XIII. 185—distinction between passion and emotion, XIV. 579—the passions, 578—classification of, *ib.*—in poetry, XVIII. 95.
 Passion-flower order of plants, V. 193.
 PASSION-WEEK, XVII. 333.
 Passive obedience, V. 718, 719—passive strength, VI. 249.
 PASSOVER, XVII. 333; VI. 669; I. 469, 470, 482.
 PASSPORT, XVII. 334.
 Pastern, XI. 639 *et seq.*—sprain in, XXI. 560.
 Pastes used as bait in angling, III. 156, n.
 Pasteur (M.), on optics, XVI. 550, 682.
 PASTO, town in New Granada, XVII. 334.
 PASTORAL, kind of poetry, XVI. 334; XVIII. 103, 111—theology, *ib.*—letters, *ib.*—Pope's, 328.
 — tribes of Asia, III. 742—manners of, 750.
 Pastures, II. 323—old pastures of England, 324—for dairy cows, VII. 622—in France, X. 248. See Meadows.
 Pataecus, genus of fishes, XII. 308.
 PATAGONIA, XVII. 334—climate of, II. 673—stature of the natives, 691—Patagonian branch of the American aborigines, 677—mountains of, XVII. 592, 645—pampas of, 608.

PAT—PAU

- PATAK, Saros, town in Hungary, XVII. 336.
 PATANI, in the Malay Peninsula, XVII. 336.
 PATAVINITY, XVII. 336.
 PATAVIUM, XVII. 336, 42.
 Patella, or knee-pan, III. 35—sprain of, in cattle, XXI. 560.
 — genus of mollusks, XV. 379.
 Patellidæ, family of mollusks, XV. 379—fossil, XVII. 111.
 Patellimani, insects, IX. 94.
 Patellini (Luigi), his work on insects, IX. 23.
 Patent fuels for steam-boilers, XX. 653.
 PATENTS: Letters-patent, for inventions, XVII. 336.
 — in the United States, XXI. 426.
 PATERA, XVII. 339.
 PATERCULUS (C. Velleius), historian, XVII. 339; XXI. 243, 244—Burman's edition of, V. 787.
 Paternity, XIV. 426. See Parent and Child.
 PATERNO, town in Sicily, XVII. 339.
 Paterson (Lieut.), on the Tetraodon electricus, VIII. 577.
 — (WILLIAM), XVII. 340—projector of the Bank of England, XV. 455; and of the Scottish colony of Darien, VII. 656—work by, XIII. 292.
 — town in the United States, XVII. 339.
 PATHOLOGY, XVII. 340, 648; XIV. 463—of the insane, 535—pathological cells, XVII. 650—pathological physiology, 689—of the nervous system, 698, 700. See Physiology, Disease.
 PATIBULUM, XVII. 340; X. 352.
 PATMOS, island, XVII. 340.
 PATNA, town and district in India, XVII. 341; IV. 651—table-cloths made at, VII. 439.
 Patos (Lagao dos), in Brazil, XIX. 176.
 PATRAS, town in Greece, XVII. 341.
 Patria, lake, XX. 239.
 PATRIARCH, XVII. 342—of Constantinople, XI. 33, 36—antediluvian patriarchs, III. 267.
 PATRICIANS, Roman, XVII. 342; I. 320; XVIII. 9; XIX. 296.
 Patricius (Franciscus), works of, I. 25.
 PATRICK (St), XVII. 342—his mission to Ireland, XII. 465.
 — (SIMON), bishop, XVII. 342.
 — Cathedral of, Dublin, VIII. 221.
 — (St), Order of, XVII. 342; XI. 340; XIII. 119.
 Patriotic fund, XIX. 506.
 Patrobus, genus of insects, IX. 94.
 PATROCLUS, Grecian chief, XVII. 343.
 PATROL, in war, XVII. 343.
 PATRON, Roman, XVII. 343—in the Church of Rome, *ib.*—in the English Church, II. 158.
 Patronage, II. 158—law of, in Scotland, V. 669; XVIII. 492, 496. See Veto Act.
 PATRONYMIC, XVII. 343.
 PATA, or Pata, African town, XVII. 343.
 PATTI, town in Sicily, XVII. 343.
 Pattinson (Mr), his method of separating silver from lead, XIII. 299; XV. 234.
 Patzcuaro, town in Mexico, XVII. 331.
 PAU, town in France, XVII. 344; XVIII. 701.
 PAUL (St), XVII. 344; III. 305—the Clermont MS. of his Epistles, VI. 765—Lord Lyttleton on his conversion, XIII. 754—his claim to the authorship of the Epistle to the Hebrews, XI. 277—scene of his shipwreck, XIV. 114—his Epistle to Titus, XXI. 291.
 PAUL I., II., III., IV., V., popes, XVII. 351.
 — I., Czar of Russia, XVII. 351; V. 582; XIX. 488—his challenge to the sovereigns of Europe, 489—his assassination, 490.
 — (FATHER), XVII. 351—Amelot's French translation of his History of the Council of Trent, II. 666.
 — of SAMOSATA, XVII. 350.
 — THE DEACON, XVII. 351.

PAU—PAX

- Paul of Egina. See Ægineta (Paulus).
 — (Lewis), his spinning-machine, XX. 509.
 — DE LOANDA, XVII. 352; XIII. 531.
 — (St), town in the island of Bourbon, XVII. 351.
 — (St), island in the Indian Ocean, XVII. 352; IV. 268.
 Paul's (St), Cathedral in London, XIII. 670; XXI. 935, 936—its architecture, III. 455—dome, 410, 411—dome-vaulting, 413, 414—bell of, IV. 629—whispering gallery, VIII. 373—library of, XIII. 394—roof of, VI. 266; XIX. 373—protection from lightning, VI. 202—stone employed in building, XX. 712—Thornhill's paintings in the dome of, XXI. 237.
 — (St), Church, Covent Garden, roof of, XIX. 386.
 Paula, town of Naples, XVII. 239.
 Pauli (Simon), II. 761.
 Paulianists, sectaries, XVII. 351.
 PAULICIANS, THE, XVII. 352.
 Paulin (Mr), on the conversion of smolts into grilse, IX. 596, n. 3—on the salmon fishing of the Tweed, 606, n. 1, 2.
 PAULINUS (M. P. Anicius), bishop of Nola, XVII. 352.
 — (Suetonius), V. 378.
 Paulite, mineral, XV. 82.
 Paulo (San), in Brazil, V. 281, 283, 295.
 PAULUS ÆGINETA, XVII. 352; II. 161; XIV. 455—on surgery, XX. 814.
 — ÆMILIUS, XVII. 352; II. 162; VI. 295.
 — (H. E. GOTTLÖB), German divine, XVII. 352—on the death of Christ, XII. 763, n. 1—on miracles, XV. 263, n. 1.
 — (JULIUS), Roman jurist, XVII. 352.
 — (Catena), V. 380.
 Paumotu Islands, XVIII. 282.
 Paunch of ruminants, III. 108.
 Paunching, disease in cattle, XXI. 566.
 Pauperism, in Glasgow, X. 654; Dr Chalmers' experiments on, VI. 404—New York, XVI. 221—compared with mendicancy, XVIII. 298—progress of, 306—in Suffolk, 791; United States, XXI. 425. See Mendicancy, Poor-Laws.
 Paupers, in England and Wales, VIII. 748; XVIII. 315—proportion of, in workhouses, 749—in Ireland, XII. 529, 530—London, XIII. 665—settlement law for, XVIII. 299—Charles II., act of settlement for, 302—out-door relief to, 305—indoor relief, 302. See Poor Laws.
 PAUSANIAS, Greek general, XVII. 353; XX. 500.
 — ancient Greek antiquary, XVII. 353—his description of Athens, IV. 159, n.; 161—his notices of ancient sculpture, XIX. 843 *et seq.*
 — Spartan king, IV. 209.
 — king of Macedonia, XIII. 762.
 — assassin of Philip of Macedon, XIII. 765.
 PAUSIAS, Greek painter, XVII. 353, 52, 57.
 Pausilippo (Grotta di), XI. 70.
 Pausus, genus of insects, IX. 142.
 PAUW (Cornelius de), XVII. 353—on the Chinese, VI. 558, 586, 582.
 PAVIA, in Italy, XVII. 354—university of, XXI. 492—battle of, XX. 885.
 Paviæ, trees, XVII. 762.
 PAVILION, XVII. 355—at Brighton, V. 367.
 PAVING, XIV. 444—with bricks and tiles, V. 735—with stone, 739—of roads, XIX. 224; streets, 227—with wooden blocks, *ib.*
 PAVLOGRAD, Russian town, XVII. 355.
 Pavo, genus of birds, XVI. 786.
 — constellation, IV. 80.
 Pavonia, genus of insects, IX. 208.
 Pawn offices, in Ireland, XII. 528.
 PAWNBROKER, XVII. 355; V. 674—origin of the sign of the three balls, III. 324.
 PAWTUCKET, town in United States, XVII. 355.
 — river, XIX. 146.
 Paxilloma, genus of insects, IX. 184.
 Paxillus, genus of insects, IX. 128.

PAX—PEC

PAXO, one of the Ionian islands, XVII. 355; XII. 452.
 Paxton (Sir Joseph), his Great Exhibition building, III. 491; IX. 454—introduced a new material into construction, III. 491—on botanical structures, XI. 754—crystal palace at Sydenham heated by his system, XX. 892; water-works at, constructed by, ib.
 Pay, of officers in the army, VII. 202; half-pay, 203—medical, 202, 203—of the royal navy, XVI. 109, 110, 111; half-pay, 113.
 Payas, XI. 613.
 Payen on brewing, V. 325, 329—his method of grinding and sifting white lead, XIII. 302—on the manufacture of sugar, XX. 793; of beet-root sugar, 797.
 Paykul (Gustavus), his works on insects, IX. 12.
 Paymaster-general of the British army, III. 664—paymaster in the navy, XVI. 105.
 Payne (Thomas), his iron bridges, XII. 578.
 ——— (Mr), his pedometer, XVII. 360.
 ——— on the rectitude of God, XXI. 192—on original sin, 205.
 PAZ (La), department of Bolivia, XVII. 355; IV. 821 *et seq.*, 82.
 PAZ DE AYACUCHO (La), town in Bolivia, XVII. 355—climate, IV. 826—population, 827.
 Pazo on the mines of Potozi, IV. 825.
 PEA, XVII. 355; V. 76, 124, 130, 139—as food, IX. 760—culture of, II. 312; XI. 738—sweet pea, V. 127.
 PEACE RIVER, XVII. 355.
 ——— (William), his machine for excavating coal, VII. 121.
 Peach, V. 191—culture and varieties of, XI. 708, 709—peach-house, 728.
 Peacock, XVII. 786; IX. 762; XVII. 638—of Japan, XII. 690; Java, 704.
 ——— (Dr), his Reports on Mathematics, I. 804, n. 1—his Life of Dr Thomas Young, 818, 890, 893, n. 3.
 ——— (Mr), his filter, IX. 581.
 Peak (High), Derbyshire, VII. 753, 754.
 Peake (Mr), his life-boat, XIII. 446—his work on ship-building, XX. 162.
 Pear, V. 191—culture and varieties of, XI. 713—composition of, IX. 759—specific gravity of the wood of the pear-tree, XII. 89.
 ——— prickly, V. 194.
 PEARCE (Zachary), D.D., bishop, XVII. 356.
 PEARL, XVII. 356—of Britain, VII. 69—Japan, XII. 689—Scotland, XIX. 796—Sindh, XX. 304—mollusks producing, XV. 343, 348—value of, 348—specific gravity of, XII. 88—mother-of-pearl, XVII. 356.
 PEARL ISLANDS, XVII. 357.
 Pearl-divers, VIII. 56.
 PEARL-FISHERIES, XVII. 357, 444; XV. 343—of Bahrein, IV. 367—Ceylon, VI. 395; VIII. 60—Margarita, XIV. 300.
 Pearl-mica, XV. 79.
 Pearl-sinter, XV. 69.
 Pearl-spar, XV. 92.
 Pearl-stone, XV. 72, 132.
 Pearl-type, XXI. 401, 402, 403.
 Pearsall (Mr), on the phosphorescent effects of electricity, VIII. 598, 599.
 Pearson (Dr), on the micrometer, XIV. 744, 745 *et seq.*—on cow-pox, XXI. 500.
 ——— (EDWARD), D.D., XVII. 357.
 ——— (JOHN), D.D., bishop, XVII. 358—on the Messiah, XXI. 208.
 Peasants, war of the, XIII. 731—in Sweden, XX. 865—revolt of, in Switzerland, ib.
 Pease Burn and Bridge, IV. 681.
 PEAT, XVII. 358; XV. 123; X. 318—charred, as a manure, II. 304—ashes, as a manure, 414—its use in smelting iron, XII. 542—in Ireland, 507—France, X. 251—Perthshire, XVII. 458.
 Pebble, specific gravity of, XII. 88.
 Peccan-nut, XVI. 395.
 Peccary, quadruped, XIV. 198.

PEC—PEG

Pechlin, case of recovery from drowning related by, VIII. 181.
 Pechurane, mineral, XV. 111.
 PECK (Francis), XVII. 359.
 PECKHAM, XVII. 360.
 Pecksa, town in Hungary, XVII. 503.
 Pecora, order of mammalia, XIV. 202, 135.
 Pecquet, physiological discoveries of, II. 761; XIV. 460.
 Pecten, genus of mollusks, XV. 348, 347—fossil, XVII. 105, 106.
 Pectic acid, II. 381.
 Pectine, II. 381.
 Pectinibranchiata, mollusks, XV. 381.
 Pectinidae, fossil mollusks, XVII. 105.
 Pectolite, mineral, XV. 76.
 Pectunculus, genus of mollusks, XV. 347, 349.
 PEDAL, musical term, XVII. 360; XV. 736.
 Pedaliaceæ, nat. order of plants, V. 200.
 PEDESTAL, in architecture, XVII. 360; III. 511—in Italian architecture, 478.
 Pedestrian feats, XI. 170.
 Pedetes, genus of mammalia, XIV. 185.
 Pedicel, in botany, V. 113.
 Pedicellina, XV. 321.
 Pedicellina, zoophytes, XXI. 1001.
 Pediculus, genus of insects, IX. 262.
 PEDIMENT, in architecture, XVII. 360; III. 487, 511—Doric, 464—Ionic, 466—Roman Corinthian, 475—mouldings for, XII. 808.
 Pedipes, genus of mollusks, XV. 375.
 PEDOMETER, XVII. 360; VII. 35.
 Pedraza (General), XIV. 712.
 Pedro (Dom), emperor of Brazil, XVIII. 389, 390; V. 288.
 ——— II., V. 290.
 ——— V., king of Portugal, XVIII. 392.
 ——— the Cruel, XX. 464.
 Pedom, genus of mollusks, XV. 348.
 Peduncle of flowers, V. 113.
 PEEBLES, Scottish town, XVII. 361—railway, XVIII. 797.
 PEEBLESHIRE, XVII. 360—mountains of, XIX. 790—agricultural statistics, 796, 797, 798—population, 799.
 PEEL (Sir Robert), XVII. 361; V. 648 *et seq.*—on the Catholic question, 631, 632—his motion for financial reform, 651—on the repeal of the Test and Corporation Acts, 652—his measure for Catholic emancipation, 655—home secretary, 634—his premiership, 644, 669—proposal for removing the ladies of the bed-chamber, 666—his corn-law measure in 1842, VII. 383—his repeal of the corn-laws, V. 670; VII. 384—his modification of the tariff, ib.—his Bank Act of 1844, XV. 462, 463—his Police Act of 1829, XVIII. 193—on the Irish police force, 206—his schools at Tamworth, XXI. 17—income-tax proposed by, 53; returns under, ib.—customs-duties abolished by, 61—his political connection with the Duke of Wellington, 830.
 ——— (Sir Robert, senior), XIV. 251, 259.
 ——— town in the Isle of Man, XVII. 366; XIV. 246.
 PEELE (George), dramatist, XVII. 366—his letter respecting Allyn and Shakspeare, II. 592.
 Peerage, VIII. 767—rights of, XVI. 281—ceremony of the admission of a baron into, IV. 469—Baron Wensleydale's elevation to, XI. 336, n.—abolition of hereditary, in France, X. 206—opposition to Lord George Germaine's elevation to, V. 498.
 PEERS, XVII. 367—creation of, XVI. 281—privileges, ib., 282—coronets worn by, XI. 336—French Chamber of Peers, X. 277.
 ——— House of. See Lords, House of.
 Peganite, mineral, XV. 74.
 Pegasidae, family of fishes, XII. 315.
 PEGASUS, XVII. 367; IV. 637.
 ——— constellation, IV. 80.
 ——— genus of fishes, XII. 315.
 PEGAU, town in Saxony, XVII. 367.
 Pegmatite, mineral, XV. 137—its use in

PEG—PEL

the manufacture of porcelain, XVIII. 439.
 PEGO, town in Spain, XVII. 367.
 PEGU, in Eastern India, XVII. 367—subdued by the Burmans, V. 782—annexed to the British possessions, in 1853, 785; XI. 509—two temples near Syrian in, VII. 715—timber of, XXI. 276, 277.
 Pehlvi language, XIII. 208.
 Peignot (G.), on bibliography, IV. 707—on prohibited books, 712—his classification of books, 715—his bibliographical works, 716.
 PEILAU, town in Prussian Silesia, XVII. 367.
 PEINE FORTE ET DURE, XVII. 367.
 PEINT, XVII. 367.
 PEIPUS, XVII. 367; XIII. 527.
 Peiræus. See Piræus.
 Peirce (Prof.), on the orbits of Uranus and Neptune, I. 832.
 PEIRESC (Nicolas-Claude-Fabri), XVII. 367; II. 761.
 Peisistratus. See Pisistratus.
 PEKALONGAN, in Java, XVII. 367.
 Pekan, in zoology, XIV. 167.
 PEKING, or Pekin, XVII. 368—the Pekin Gazette, VI. 561—meteorological observations at, XII. 687.
 Pekoe, tea, XXI. 85.
 Pe-la, white wax, IX. 173.
 Pelagians, XVII. 369; XVIII. 477—their views on original sin, XXI. 203.
 PELAGIUS, XVII. 369—his opinions on baptism, IV. 423—on the depravity of human nature, XVIII. 477—on the effects of Adam's sin, XXI. 204.
 ——— genus of mammalia, XIV. 172.
 ——— I., II., Popes, XVII. 370.
 Pelagosaurus, fossil reptiles, XVII. 152.
 Pelamys, genus of fishes, XII. 296.
 Pelargonium, genus of plants, XI. 757.
 PELASGI, XVII. 370; XIX. 295—their architecture, III. 439—alphabet, II. Plate.
 Pelates, genus of fishes, XII. 277—fossil, 343.
 Pelayo, his wars with the Moors in Spain, XX. 460.
 Pelicanus, genus of birds, XVI. 813.
 Pelecinus, genus of insects, IX. 184.
 Pelecocera, genus of insects, IX. 240.
 Peleg, VIII. 44.
 PELESTRINA, town in Italy, XVII. 371.
 PELEUS, XVII. 371.
 PELEW ISLANDS, XVII. 371; XVIII. 269.
 Pelham (Lord), on the peace of Amiens, V. 586.
 Pelican, XVI. 813; XVII. 634.
 Pelicium, genus of insects, IX. 94.
 PELIGNI, THE, XVII. 371.
 Péligré (M.), his analysis of tea, XXI. 82.
 PELION, mountain, XVII. 372, 4.
 Pelissier (General), XIX. 508.
 Pelitarius, French mathematician, discoveries of, I. 558.
 PELL (John), mathematician, XVII. 372.
 PELLA, in Macedonia, XVII. 372; XIII. 760, 764.
 Pellat (Apsley), on the calorific value of coal and coke, XX. 632.
 PELLERIN (Joseph), numismatist, XVII. 372.
 PELLICO (Silvio), XVII. 372; XII. 455; XVIII. 112.
 PELLISSON - FONTANIER (Paul), French writer, XVII. 373.
 Pellitory of Spain, plant, V. 197.
 Pellona, genus of fishes, XII. 237.
 Pelocophorus, genus of insects, IX. 111.
 Pelocotoma, genus of insects, IX. 134.
 Pelopæus, genus of insects, IX. 195.
 PELOPIDAS, XVII. 373; XXI. 177, 178.
 Peloponnesian war, IV. 203; XXI. 240.
 PELOPONNESUS, XVII. 373; XI. 10, 19—Epaminondas' invasion of, XXI. 177, 178.
 PELOPS, XVII. 373.
 Pelor, genus of fishes, XII. 280, 283.
 Pelori, genus of fishes, XII. 304.
 Pelouze, on a substance like gun-cotton, XI. 94.
 PELTS, XVII. 373.

PEL—PEN

Peltastes, genus of insects, IX. 188.
 Peltier (M.), Sir J. Mackintosh's defence of, XIII. 786.
 ——— (M.), on electricity, VIII. 535—experiments in thermo-electricity, XXI. 653, 627—his thermo-electric pincers, 654—hygrometer, ib.
 PELUSIUM, Egyptian city, XVII. 373; VIII. 498—proposed canal between it and Suez, XX. 789.
 Pelvis, regions of, III. 1—bones of, 12—dimensions, &c. of, 13, 68—of mammalia, 80—of birds, 85—of reptiles, 88 of fishes, 90—pelvic viscera of the domestic animals, XXI. 570.
 PELWORM, island, XVII. 373.
 PEMBA, island, XVII. 373.
 PEMBROKE, XVII. 373—dockyard at, VIII. 84.
 ——— college, Oxford, XXI. 459.
 Pembroke, Welsh breed of cattle, II. 342.
 PEMBROKESHIRE, XVII. 374.
 Pemmican, IX. 767; XIV. 206.
 Pemphedron, genus of insects, IX. 196.
 Pempheris, genus of fishes, XII. 302.
 Pen. See Pens.
 Penæaceæ, nat. order of plants, V. 205.
 Penal Code, VIII. 380—Bentham on, I. 393. See Punishment.
 ——— servitude, XVIII. 580, 581.
 ——— settlement in Tasmania, XXI. 29.
 Penalties for offences against Post-office Acts, XVIII. 418.
 Penance, XVII. 389—among the Hindus, XI. 469—Popish doctrine of, XVIII. 336—a doctrine of Mohammedanism, XV. 303.
 PENANG, XVII. 375—or Pulo Penang, XVIII. 516.
 PENARANDA-DE-BRACEMONTE, in Spain, XVII. 375.
 PENAS DE SAN PEDRO, in Spain, XVII. 375.
 PENATES, XVII. 375; I. 514.
 PENCILS, XVII. 375—pencil of light, XIII. 450—pencil blue, VIII. 319.
 PENDANT, XVII. 376—pendants in heraldry, ib.—of a ship, ib.
 Pendent, in architecture, III. 511.
 PENDLETON, suburb of Manchester, XVII. 376.
 PENDULUM, XVII. 376—Galileo's discoveries regarding, I. 592; X. 374—earth's figure, as determined by, I. 850, 854; IX. 573—early observations, I. 851—invariable pendulum, ib.—Kater's convertible, 852—Baily's pendulum observations, ib.—Foucault's experiment, 854—its slower vibration at the equator, and explanation by Newton and Huygens, 619—ballistic, IV. 398; XI. 111—Condamine on the length of, at St Domingo, VII. 230—revolving, 4; XIV. 410—for determining the velocity of water, XII. 142—Dubuat on the motions of, I. 853, 887—influence of the air on, XVIII. 48—centre of oscillation, XIX. 436.
 ——— of clocks, VII. 3; XVII. 384—revolving, VII. 4—suspension of, 5—regulation of, 6—compensation pendulums, 7; XVII. 387—for the great Westminster clock, 6—metronome pendulums, 286.
 PENEDO, in Brazil, XVII. 389.
 Penellinae, entozoa, XXI. 982.
 PENELOPE, XVII. 389.
 ——— genus of birds, XVI. 785.
 Penetration of shot, XI. 143.
 Peneus, river, XI. 11; XXI. 147.
 Penguins, XVI. 810; XVII. 634—the solitary penguin, XVIII. 181.
 PENIG, town in Saxony, XVII. 389.
 PENINSULA, XVII. 389; X. 483—name of Spain and Portugal, XX. 484.
 Peninsular war, V. 603 *et seq.*; X. 148 *et seq.*; XXI. 821 *et seq.*—Wellington's tactics, 706 *et seq.*
 Penis, anatomy of, III. 69—erectile tissue, 799, 800.
 PENITENCE, XVII. 389—order of penitence of St Magdalen, ib.—enjoined by Mohammedans, XV. 303.

PEN—PEN

- Penitentiaries, act for establishing, XVIII. 569—Millbank, 570—Richmond Penitentiary, VIII. 221—in New York, XVI. 230—Tocqueville's inquiry into the American system, XXI. 298.
- Penitents, among the Brahmans, V. 269.
- PENKRIDGE, town in Staffordshire, XVII. 389.
- Penn (Granville), on the Iliad, X. 603, n. 2.
- (WILLIAM), XVII. 389, 398—on the character of George Fox, XVIII. 715—on Quakerism, 714 *et seq.*
- Pennant (Col.), slate quarries of, VI. 54. See Penrhyn.
- (THOMAS), XVII. 394; XIV. 127—his History of the English Chase, VI. 429—on the coronach of Ireland, VII. 412—on the migrations of the herring, XII. 235—on ornithology, XVI. 729—on the hunter, XI. 645.
- Pennatulidæ, zoophytes, XXI. 1004.
- Pennenden Heath, meeting at, V. 653; XX. 100.
- Penney (General), XVI. 305.
- Penniculi on the execution of the Earl of Morton, XI. 88.
- Pennine Alps, II. 623; XVII. 596.
- PENNISTON, town in Yorkshire, XVII. 394.
- PENNSYLVANIA, XVII. 394; XXI. 419—an asylum for persecuted Quakers, XVIII. 719—anthracite in, VII. 127—news-paper press of, XVI. 194—proportion of suicides in, XX. 800—debt of, XXI. 428 colonisation, 433—wines of, 888.
- PENNY, XVII. 399; VII. 70.
- (Captain), his northern explorations, XVIII. 173.
- Royal, XI. 745—oil of, XVI. 496.
- postage introduced, XVIII. 411; XXI. 67—loss of revenue thereby occasioned, 68.
- PENNYWEIGHT, XVII. 399; VII. 70.
- PENOBSCOT, river, XVII. 399; XIV. 98.
- PENON DE VELEZ, town in Morocco, XVII. 399.
- Penrhyn slate quarries, XVII. 620—number of people supported by, VI. 54.
- Penrhyns, coral islands, XVIII. 279.
- PENRITH, XVII. 399.
- PENRYN, XVII. 399.
- PENS, Pens, or Pencz (Gregor), painter, XVII. 399.
- XVII. 399—Bramah's patent for cutting and holding, V. 274—steel-pens made at Birmingham, IV. 732; ink for, XII. 383.
- PENSACOLA, in Florida, XVII. 400.
- BAY, XVII. 400; IX. 667.
- PENSHURST, village in Kent, XVII. 400.
- PENSIONARY, XVII. 400—Grand, ib.
- Pensions, to widows of officers in the army, VII. 203—to widows of officers in the navy, XVI. 117—good service pensions, ib.—to mothers and sisters of officers killed in action, 118—charged on post-office revenue, XVIII. 407.
- Pentaceros, genus of fishes, XII. 276.
- PENTACHORD, musical scale, XVII. 400.
- Pentacrinite, XXI. 994, 995.
- Pentacrinus, XVII. 98; XXI. 995.
- Pentactidæ, echinoderms, XXI. 986.
- PENTAGON, XVII. 400.
- Pentamera, genus of insects, IX. 77.
- Pentamerus, genus of extinct mollusks, XV. 338; XVII. 103, 104.
- PENTAMETER verse, XVII. 400.
- Pentastoma, genus of entozoa, XXI. 980.
- Pentapolis, VII. 610.
- Pentaprion, genus of fishes, XII. 288.
- Pentapus, genus of fishes, XII. 287.
- PENTATEUCH, XVII. 400; XIX. 829 *et seq.*; XV. 659—Samaritan, IV. 695; XII. 692; XIX. 839—Pseudo-Jonathan on, XXI. 23—Jerusalem Targum on, ib. See the Books of which it is composed.
- PENTATHLON, XVII. 403.
- Pentatoma, genus of insects, IX. 161.
- PENTECOST, XVII. 403; VI. 669.
- Pentelicus, marble quarries of, III. 443; XI. 14; XIX. 843.
- Penthetria, genus of insects, IX. 229.
- Penthimla, genus of insects, IX. 170.

PEN—PER

- Pentingorian table, X. 463.
- PENTLAND FIRTH, XVII. 403; VI. 62.
- HILLS, XVII. 403; VIII. 408; XIX. 791—battle of, V. 428.
- (Mr), his account of the Andes, II. 669; IV. 822, 824.
- Pentonville prison, XVIII. 570, 580, 581.
- Pentremites, fossil echinoderms, XVII. 98, 99.
- Penula (Centenius), VI. 298.
- PENUMBRA, XVII. 403; IV. 45.
- PENZA, in Russia, XVII. 403; XIX. 521.
- PENZANCE, in Cornwall, XVII. 403.
- PENZING, in Austria, XVII. 404.
- Peperino, XV. 133—as a building-stone, XX. 711.
- PEPIN D'HERISTAL, XVII. 404.
- king of France, XVII. 404; X. 7; XII. 642.
- PEPLUM, or Peplus, XVII. 404.
- Pepo, in botany, V. 138.
- PEPPER, XVII. 404—betel pepper, IV. 685—of Cochin China, VII. 48—Sumatra, XX. 804—Jamaica pepper, V. 192; XVII. 710—Cayenne, VI. 367—long-pepper, V. 207—black and white, ib.—adulterations of, IX. 770—imports of, VIII. 735.
- order of plants, V. 207.
- Peppermint, XI. 745—oil of, XVI. 496.
- Pepperwort, order of plants, V. 216, 144.
- Pepilus, genus of fishes, XII. 298.
- Pepsine, XVII. 659.
- Pepsis, genus of insects, IX. 195.
- PEPTS (Samuel), XVII. 405; XVI. 91—his management of the navy, 93; VIII. 85—library bequeathed to Magdalen College by, XIII. 398—use of tea noticed by, XXI. 89.
- (Mr), his spiral electric battery, XXI. 617.
- (Haseldine), on vegetable respiration, V. 105.
- PERA, suburb of Constantinople, XVII. 405; VII. 301.
- steam-vessel, XX. 163, 165—description of, 666.
- PERAK, in the Malay Peninsula, XVII. 405.
- PERAMBULATOR, XVII. 406.
- Perameles, genus of mammalia, XIV. 175.
- Peranezzi, engravings of, VIII. 808.
- Perca, genus of fishes, XII. 275—fossil, 343—scale of, XVII. 127.
- PERCEPTION, in mental philosophy, XVII. 406; XIV. 563—acquired perceptions, 572—difference between it and emotion, I. 345—Aristotle on, III. 549.
- PERCEVAL (Spencer), XVII. 406; V. 601, 606—his treatment of the sinking fund, X. 330.
- Perch, fish, XII. 274; IX. 764—skeleton of, XII. 208, 210—hyoid bone and gills of, 214—angling for, III. 162—sea-perch, XII. 274.
- measure, XVII. 406.
- Percheron (A. R.), his works on insects, IX. 18.
- Perching, mechanism of, III. 92.
- birds, XVI. 747.
- Perchloric acid, VI. 468.
- Perchloride of phosphorus, VI. 481.
- of tin, as a mordant, VIII. 316.
- Percidæ, family of fishes, XII. 273, 275.
- Percis, genus of fishes, XII. 273.
- PERCIVAL (Thomas), physician, XVII. 406.
- on the population of Manchester, XV. 603.
- (Mr), on the influence of the stallion in propagation, XI. 636—on the diseases of the horse, 665, 666, 668.
- Percoldei, family of fossil fishes, XII. 343.
- Percophis, genus of fishes, XII. 273.
- Percussion, heat from, XI. 275—centre of, XIV. 413; XIX. 434.
- locks, XI. 98—caps, 158, n.
- Percy, Earl of Northumberland, his rebellion in Queen Elizabeth's reign, VIII. 712.
- (Henry), Hotspur, VIII. 685, 686.
- (THOMAS), bishop, XVII. 406—on romance, XIX. 254—on the minstrels, 257.

PER—PER

- PERDICCAS, kings of Macedonia, XVII. 406; XIII. 760, 761.
- general, XVII. 406; XIII. 773 *et seq.*
- Perdix, genus of birds, XVI. 791.
- Peregrine falcon, XI. 248; XVI. 745.
- Pereira (Gomez), on brutes, V. 700.
- (JONATHAN), XVII. 406—on hemp, XI. 312—on milk, XV. 11.
- Pereire (M.), on credit mobilier, XV. 289.
- PEREJASLAV, in Russia, XVII. 407.
- PEREKOP, in Russia, XVII. 407; VII. 503—isthmus of, 506.
- Perellian silk, XXI. 783.
- Perennials, V. 77.
- PEREZ (Antonio), XVII. 407.
- (Genes), de la Hita, XIX. 286.
- Perezus on the nature and law of contracts, XV. 567.
- PERFUMERY, XVII. 408—of Paris, X. 256—perfumes of Arabia, III. 342, 361.
- PERGAMUS, in Asia Minor, XVII. 409—monarchy of, XV. 414—coins, XVI. 375—library, XIII. 383—medical school, XIV. 452.
- PERGOLESE (G. Battista), musician, XVII. 411.
- Pergusa, lake, XX. 243.
- PERIANDER, XVII. 411; VII. 368.
- Perianth, in botany, V. 117.
- Peribolus, in architecture, III. 511.
- Pericardium, III. 63.
- PERICARP, XVII. 411; V. 135.
- Periclase, mineral, XV. 87.
- PERICLES, XVII. 411; IV. 202 *et seq.*—state of Athens in the age of, 160—his encouragement of the theatre, VIII. 136—his intellectual tastes, XX. 386.
- Pericline, mineral, XV. 71.
- Peridium, in botany, V. 147.
- Peridot, mineral, XV. 89. See Chrysolite and Olivine.
- Perier (Casimer), X. 198—ministry of, 204—foreign policy, 205—death, 206.
- PERIGEE, in astronomy, XVII. 413; IV. 36, 37, 38, 131.
- Perigone, in botany, V. 117, 145.
- PERIGUEUX, town in France, XVII. 413.
- Perigynium, in botany, V. 125.
- Perigynous stamens, V. 127, 179—exogens, 179.
- PERIHELION, XVII. 413; IV. 62—of comets, 75, 76, 77; VII. 170, 180, 181.
- PERIM, island, XVII. 413; XVIII. 818.
- PERIMETER, XVII. 413.
- Perinæum, muscles of the, III. 39.
- PERIOD, in astronomy, XVII. 413—in numbers, 414—in chronology, VI. 665—in geology, XV. 195 *et seq.*—in grammar, XVIII. 685—periods of advance in modern science, I. 799.
- Periodical publications in London, XIII. 673—transmission of periodicals by post, XVIII. 417.
- Periodicity, in meteorology, XIV. 663.
- Periodus, genus of fossil fishes, XII. 338.
- PERIOECI, XVII. 414; X. 485.
- Periophthalmus, genus of fishes, XII. 306.
- Periosteum, II. 823—internal, 828—the main agent in ossification, 829.
- PERIPATETICS, XVII. 414; III. 535—their denial that air has weight, XVIII. 24.
- PERIPHERY, XVII. 414.
- PERIPHRASES, XVII. 414.
- Periplus of Hanno, II. 209; X. 461; XI. 210—of the Erythrean Sea, II. 209; XXI. 88.
- PERIPNEUMONY, XVII. 414.
- Peripteros, in architecture, III. 511.
- Perischodorus, fossil echinoidea, XVII. 99.
- Periscii, X. 485.
- Periscopic microscopes, XIV. 772.
- Periscus, VI. 43.
- Perisperm, in botany, V. 140.
- PERISTALTIC motion, XVII. 414.
- Peristedion, genus of fishes, XII. 282.
- Peristome, in botany, V. 145.
- PERISTYLE, XVII. 414; III. 511.
- PERITONEUM, XVII. 414; II. 838.
- Peritonitis, XVII. 414; in cattle, XXI. 567.
- Periwinkle, plant, V. 199—mollusk, XV. 382.

PER—PER

- PERIZONIUS (Jacob), XVII. 414—Burman's attack on, V. 786.
- PERJURY, XVII. 414.
- Perkins, his apparatus for heating by water, XI. 724; XIX. 615—on the compressibility of water, XII. 78—Perkins' metallic tractors, XX. 415—Perkins' and Heath's steel engravings, VIII. 809.
- Perla, genus of insects, IX. 180.
- PERLEBERG, town in Prussia, XVII. 414.
- Perlicus, drososcope of, VII. 766.
- Perlides, insects, IX. 180.
- PERM, town and government in Russia, XVII. 414; XIX. 521—Sir R. I. Murchison on the rocks of, XV. 205.
- Permian period, in geology, XV. 205—mollusca of, 403—ichthyodorulites, XVII. 117—fossil fishes of, 125, 640—rocks in Russia, XIX. 517—Scotland, 790.
- Pern (M. de Saint), his organo-lyricon, XVI. 713.
- Perna, genus of mollusks, XV. 348—fossil, XVII. 106.
- PERNAGOA, town in Brazil, XVII. 415.
- PERNAMBUCO, XVII. 415—settlement of, V. 280—population, 295—vegetable products, 294.
- PERNAU, town in Russia, XVII. 416.
- Pernis, genus of birds, XVI. 744.
- Perocheau (Dr), on baptising the children of heathens, XV. 276.
- Peron (M.), his account of D'Entrecasteaux's Channel, IV. 261—on the mollusca, XV. 327—on sea-serpents, XIX. 66.
- Peronia, genus of mollusks, XV. 374.
- PERONNE, in France, XVII. 416; XX. 412.
- Perophora, genus of mollusks, XV. 332.
- PERORATION, XVII. 416.
- Perotti (Nicolas), XVII. 522.
- PÉROUSE (J. F. Galaup de la), XVII. 416; IV. 420; XVIII. 277, 727.
- Perowskine, mineral, XV. 101.
- PERPENDICULAR, XVII. 416; X. 507, 511, 532.
- Perpetual motion, VI. 131.
- PERPIGNAN, town in France, XVII. 416; XVIII. 702.
- PERRAULT (Charles), XVII. 417.
- (CLAUDE), architect, XVII. 417—his design for the Louvre, III. 453—definition of "order of architecture," 463—on the sound of bells, IV. 628.
- (D'Armacourt), XVII. 417—his Fairy Tales, XIX. 287.
- Perrier (Mr), his experiments on the pressure of the air, XVIII. 27.
- Perris (Edouard), his work on insects, IX. 23.
- Perron (Anquetil du), III. 258; XIII. 4; XVII. 529—on the cosmogony of the Parsees, VII. 718.
- (Jaques Davy du), his table-talk, II. 738.
- Perronet (M.), centres constructed by, VI. 376, 377 *et seq.*—on the construction of roofs, XIX. 385.
- PERROT D'ABLANCOURT (Nicolas), XVII. 417.
- Perrotine machine for calico-printing, VIII. 315.
- Perrott (Sir John), his government of Ireland, XII. 478.
- Perrowskite, mineral, XV. 111.
- PERRY (James), editor, XVII. 417.
- (M. C.), commodore, his expedition to Japan, XII. 698.
- liquor, XVII. 418; IX. 759.
- PERSÆUS, philosopher, XVII. 418.
- Persecution, religious, principle of, I. 532—acted on by the early reformers, 533—in Scotland, XIX. 773—Kirkcudbright, XIII. 101—in Madagascar, 795—of quakers, XVIII. 718, 719—of the French Protestants, VIII. 125—in ancient Greece, XX. 381.
- Persees. See Parsees.
- PERSEPOLIS, XVII. 418—ruins of, 431; III. 438, 514—taken by Alexander, XIII. 768—cuneiform inscriptions at, XVII. 534.
- Perserin, Turkish town, XVIII. 587.

PER—PER

- Perseus, constellation, IV. 79.
 — king of Macedonia, XVII. 418;
 XIII. 775; XIX. 314.
 — son of Jupiter and Danaë, XVII.
 418.
 Perseverance of saints, XXI. 219.
 PERSHORE, town in Worcester, XVII. 418.
 PERSIA, XVII. 419; III. 733, 746—con-
 quered by the Arabs, 363—ancient archi-
 tecture, 438—climate, 736—horses,
 740—notice of its history, 742—manu-
 factures and commerce, 756—calendar,
 VI. 78, 674—war with the Romans,
 VII. 307—invaded by Julian, 308—Justin
 and Justinian's wars with, 312—
 geometers of, X. 503—conquered by
 Alexander, XIII. 767 *et seq.*; his pro-
 ceedings in, 771—Persian monarchy,
 XV. 412, 414—empire, III. 742; XI.
 542—mysticism, XV. 756—mythology,
 763—coins, XVI. 390, 392—zend, or old
 Persian language, XVII. 529—deserts
 of, 614—heights of mountains in, 643—
 Russian war with, XIX. 496—sculptured
 remains of, 847—revolt of the Zidonians
 against, XX. 269—production of silk,
 277—early use of tea in, XXI. 88—
 weights and measures, 812—tobacco,
 294—wines, 886—map of Persia, XVII.
 Plate.
 — steam-ship, XX. 665—comparative
 size of, 641.
 Persian berries, a dyestuff, VIII. 318.
 — GULF, XVII. 443.
 Persians, in ethnology, IX. 346—their
 manner of adoration, II. 150—belief in
 angels, III. 141—Anquetil du Perron's
 collection of their sacred writings, 259
 —Antioch destroyed by, 274—ancient
 armies, 623—character, 749—their cul-
 tivation of astronomy, 795—baths, IV.
 506—Bibles, 700—castes, VI. 315—car-
 pets, 269, 270—stoves, 556—invasion of
 Greece by, IV. 198 *et seq.*—invasion and
 conquest of Egypt, VIII. 465, 474—Jeru-
 salem taken by, XII. 734—wars with
 the Romans, XVII. 195; XIX. 347, 348,
 349—libraries, XIII. 382—language,
 208—education, XV. 807—their inva-
 sion of Greece, XX. 500.
 Persic version of the Scriptures, XIX. 839.
 PERSIUS FLACCUS (Aulus), XVII. 444—Sir
 William Drummond's translation of,
 VIII. 194; Gifford's, X. 622—poetry of,
 XVIII. 105.
 PERSON, XVII. 444—injuries against the,
 XIV. 428—safety of, a basis of law,
 XIII. 256—in grammar, X. 767, 789.
 Personal Identity, XIV. 425, 618.
 PERSONALITY, XVII. 444; XIV. 617—the
 consciousness of, 584—divine personality
 of the Holy Spirit, XXI. 217.
 Personate corolla, in botany, V. 124.
 PERSONIFICATION, XVII. 444; XV. 759.
 Personz on brewing, V. 325, 329.
 PERSPECTIVE, XVII. 445—history of, XIII.
 449.
 Perspicuity of style, Aristotle on, III. 558
 —rules for the attainment of, XIX. 141.
 Perspiration—effects of electricity on, VIII.
 602—obstructed by damp clothes, IX.
 414.
 Persuasion, XIX. 118—process of, 127—
 relations between it and poetry, 137.
 PERTH, Scotch town, XVII. 450.
 PERTHES (C. Friedrich), bookseller, XVII.
 459.
 PERTSHIRE, XVII. 454—agricultural statis-
 tistics, XIX. 796, 797, 798—population,
 799—ordnance survey of, XXI. 334.
 PERTINAX (Helvius), Roman emperor,
 XVII. 460—his reign, XIX. 345.
 PERTUIS, town in France, XVII. 460.
 Perturbations, planetary, I. 811; III. 809;
 IV. 61.
 Perty (Max.), his works on insects, IX. 17.
 Pertz (Dr), annals of G. G. Licinianus
 published by, XVII. 215—his mode of
 restoring the characters in palimpsests,
 ib.
 PERU, XVII. 460; II. 685, 704—climate,
 672, 673—ancient civilization, 687—revo-
 lution, 701—ancient agriculture in, 251

PER—PET

- suspension bridges, 686; III. 131—
 expeditions of the bucaniers against,
 V. 712—castes, VI. 316—invasion of
 Chile, 552—French trade with, X. 260—
 mythology, XV. 767—mines, 237—me-
 tallic produce, 248—use of coca in, VII.
 46—west coast rainless, XVII. 615—
 abundance of silver in, 622—height of
 mountains, 644, 645—produce of pre-
 cious metals, XVIII. 461, 462—Prescott's
 History of the Conquest of, 504, 506—
 ancient roads in, XIX. 228—postal sys-
 tem, XVIII. 424—weights and measures,
 XXI. 812—map of, VII. Plate. See
 Almagro, Pizarro, Bolivar, Columbia,
 Peruvians.
 PERUGIA, in Italy, XVII. 474, 243—uni-
 versity of, XXI. 492.
 — (Lake of), XVII. 474, 242; XII.
 638.
 PERUGINO (Pietro), painter, XVII. 475;
 XIX. 861.
 Perugia, war of, XIX. 329.
 Peruzzi on perspective, XIII. 449.
 PERUVIAN BARK, XVII. 475; IV. 444.
 See Cinchona.
 Peruvians, skulls of, II. 677—compared
 with the Chinese, 687—language of,
 689—appearance and character of, ib.
 —Indians of Bolivia, IV. 828, 830—
 their tradition of the deluge, VII. 719.
 See Peru.
 PERUWELZ, town in Belgium, XVII. 475.
 PERUZZI (Baldassare), architect, XVII.
 475; III. 452.
 Perwitzky, fur-skinned animal, X. 348.
 PESARO, town in Italy, XVII. 476—manu-
 facture of pottery at, XVIII. 432.
 PESARO-E-URBINO, province in Italy,
 XVII. 476.
 Pescara, river, XX. 238.
 PESCE (Nicola or Cola), Sicilian diver,
 XVII. 476; VIII. 56.
 PESCHIERA, town in Italy, XVII. 476.
 Peschito version of the Scriptures, XIX.
 839—in British Museum, XIII. 393.
 PESCIA, town in Tuscany, XVII. 476.
 PESCO-PAGANO, town of Naples, XVII.
 476.
 PESHAWUR, in India, XVII. 476; XVIII.
 687, 690, 691.
 Pest. See Pesth.
 — or pestilence. See Plague.
 PESTALOZZI (J. Heinrich), XVII. 477;
 XV. 809.
 PESTH, XVII. 479—population, XII. 11—
 trade of, 17—fairs, ib.—university, 18;
 XXI. 492—museum, ib.—libraries,
 XIII. 423.
 Pet and Jackman's exploratory voyage,
 XVIII. 165.
 Petagna (Vincent), his work on insects,
 IX. 7.
 PETALISM, XVII. 480, 10.
 Petalite, mineral, XV. 72.
 Petaloideæ, sub-class of plants, V. 180,
 210.
 Petalocheirus, genus of insects, IX. 163.
 Petals of plants, V. 117, 123.
 Petasus, ancient hat, XVII. 709.
 PETAU (Denis), XVII. 480.
 Petaurus, genus of mammalia, XIV. 176.
 PETCHORA, river, XVII. 480, 647; XIX.
 515.
 PETER, apostle, XVII. 480; III. 375.
 — I., Czar of Russia, XVII. 483—his
 tax on beards, IV. 528—reign of, XIX.
 477—his constitution for the church in
 Russia, XI. 35—St Petersburg founded
 by, XVII. 486—statue of, 491; XIX.
 485.
 — II., XVII. 483—reign of, XIX. 481.
 — III., XVII. 483; VI. 335—reign
 of, XIX. 482—funeral, 489.
 — of Blois, XVII. 483.
 — (St), and St Paul, harbour of, in
 Kamtschatka, XVII. 501
 — the Hermit, XVII. 483; III. 635;
 VII. 524.
 Peter's (St), church, at Rome, III. 452;
 V. 274; VI. 376; XIV. 738; XIX. 368
 —mosaics of, XV. 653—stone employed
 in building, XX. 712.

PET—PET

- PETER'S PENCE, XVII. 484.
 PETER-LE-PORT, in Guernsey, XVII. 485.
 PETERBOROUGH, XVII. 484.
 — (EARL OF), XVII. 484—his Spanish
 expedition, V. 449. See Mordaunt,
 Charles.
 Peterbote, mountain in the Mauritius, XIV.
 362—affords evidence of the absence of
 earthquakes, XVII. 617.
 PETERHEAD, XVII. 484—effects of the
 tides at, XI. 218.
 Peterloo, affair of, XIV. 251; XVII. 362.
 Peters (Col.), on horsemanship, XI. 674.
 — (BONAVENTURA), Dutch artist,
 XVII. 485.
 — (Mr), his microscopic writing, XIV.
 802.
 — (M.), on the parallax of stars, I.
 865; IV. 96.
 PETERSBURG (St), XVII. 486—Imperial
 Academy of Sciences at, II. 65—Aca-
 demy of Arts, 67; of Languages, 71—
 architecture of public buildings, III.
 454—port of, IV. 404—Bible Society, 704
 —sea-walls, VIII. 645—foundation of,
 XIX. 478—schools and other establish-
 ments at, 485, 531—climate, 519—Ga-
 zette, 546—libraries, XIII. 424—meteo-
 rological observations at, XIV. 686.
 See Russia.
 — problem, XVIII. 601.
 — a government in Russia, XVII.
 492.
 — town in Virginia, XVII. 493.
 Petersen on language, XIII. 198.
 PETERSFIELD, town in Hants, XVII. 493.
 PETERSWALDAU, town in Prussia, XVII.
 493.
 Peterwaraden, battle of, IX. 370.
 PETERWARDEIN, Austrian town, XVII. 493.
 Petetin (M.), case of mesmeric phenomena
 related by, XX. 424—his work on ani-
 mal electricity, ib.
 PETHERTON, North and South, XVII. 493.
 PETHORA GURH, in India, XVII. 493.
 Petic, Mexican town, XIV. 727.
 Petiole, V. 87, 92.
 PETION DE VILLENEUVE (Jerome), XVII.
 493; X. 67, 68, 83.
 — governor of Hayti, VIII. 257; XI.
 257.
 PETIS DE LA CROIX (François), XVII. 494.
 PETIT (Jean-Louis), surgeon, XVII. 494—
 his surgical improvements, XX. 818.
 — (PIERRE), mathematician, XVII.
 494—on the law of cooling, I. 952—on
 the pyrometer, XVIII. 703.
 — case of, X. 231.
 PETIT-CANAL, town in Guadeloupe, XVII.
 494.
 PETITIO PRINCIPII, XVII. 494; IX. 477.
 Petitions, transmission of by post, XVIII.
 417.
 PETITOT (Jean), XVII. 494.
 PETIVER (James), botanist, XVII. 494.
 Petiveriaceæ, nat. order of plants, V. 204.
 Peto (Sir S. M.), his improvements at
 Lowestoft, XIII. 704.
 PETRA, XVII. 495; III. 361; VI. 350;
 XI. 70.
 PETRARCA (Francesco), XVII. 496, 552—
 on the blunders of transcribers, IV. 706
 —his kind offices to Boccaccio, 801—his
 house and tomb at Arqua, III. 674—his
 poetry, XVIII. 95, 109—his imitators,
 110.
 Petrels, birds, XVI. 811.
 Petri (Olaus), XVIII. 827; XIX. 697.
 Petricola, genus of mollusks, XV. 350—
 fossil, XVII. 108.
 PETRIFICATION, XVII. 501. See Palæon-
 tology.
 PETRINIA, town in Austria, XVII. 501.
 PETROLEUM, XVII. 501, 422, 602; IV.
 736; XV. 124—in Burmah, V. 779—
 Cuba, VII. 565—Derbyshire, 755—New
 York, XVI. 215.
 Petrology, XV. 156.
 Petromyzon, genus of fishes, XII. 220,
 224, 228.
 Petromyzontidæ, family of fishes, XII. 228.
 PETRONIUS (Arbiter), XVII. 501—Bur-
 man's edition of, V. 786.

PET—PHA

- PETROPAULOVSKI, town in Russia, XVII.
 501; XII. 41—attacked by the allies in
 1854, XIX. 507.
 — town in Siberia, XVII. 501.
 Petrosirtes, genus of fishes, XII. 222,
 308, 309.
 PETROVSK, town in Russia, XVII. 501.
 PETROZAVODSK, town in Russia, XVII.
 501.
 PETSII, town in Turkey, XVII. 501.
 Pett (Phineas), XVI. 92; XX. 128.
 — (Peter), XVI. 92, 93; XX. 128—
 Sovereign of the Seas, man-of-war,
 built by, ib.; VIII. 210.
 PETTY (Sir William), XVII. 501—on the
 population of Ireland, XII. 507—on
 political economy, XVIII. 217, 251, n.
 — (Lord Henry), on the sinking fund,
 V. 600; X. 330, 335.
 Pettychaps, bird, XVI. 756.
 Pettycur, XIII. 93.
 Petunculus, genus of fossil mollusks, XVII.
 106.
 Petunze, crystallisation of, VII. 559.
 PETWORTH, in Sussex, XVII. 503.
 PETZKA, town in Hungary, XVII. 503.
 Petzval (M.), his photographic lens, XVII.
 554.
 Peutingian Table, XIII. 418, and n. 3;
 X. 463.
 PEWTER, XVII. 503—specific gravity of,
 XII. 88.
 Peyer (Conrad), anatomist, II. 763.
 Peyerian glands, III. 61.
 Peyrard's burning mirrors, VI. 8, 9.
 Peyron (Prof.), his discovery of part of the
 Theodosian code, VI. 744; XVII. 214—
 his mode of restoring palimpsests, 215
 —Egyptian papyri published by, 265.
 Peyronnet (M. de), X. 192 *et seq.*, 213.
 Peyton (Mr), sportsman, XII. 41.
 PÉZENAS, town in France, XVII. 503.
 Pezold (Dr), on animal magnetism, XX.
 443.
 Pezoporos, genus of birds, XVI. 783.
 PFEFFEL (G. Conrad), poet, XVII. 504.
 PFEFFERS, in Switzerland, XVII. 504—
 mineral waters of, XV. 37.
 Pfister (Albert), early printer, XVIII. 532.
 PFORZHEIM, town in Baden, XVII. 504.
 PFÜLLINGEN, town in Wurtemberg, XVII.
 504.
 Phacocoherus, genus of mammalia, XIV.
 197—teeth of, XVI. 414, 468.
 Phacolite, mineral, XV. 76.
 PHÆDO of Elis, XVII. 504.
 Phædon, genus of insects, IX. 150.
 PHÆDRUS, XVII. 504—his fables, IX. 462—
 Cunningham and Clerk's editions, VII.
 587—Burman's edition, V. 786—Bent-
 ley's edition, IV. 659.
 — dials of, VII. 774.
 Phænogamous plants, V. 76.
 PHAETHON, XVII. 504.
 Phæton, genus of birds, XVI. 815.
 Phalacrocorax, genus of birds, XVI. 813.
 Phalacrus, genus of insects, IX. 151.
 Phalæna, genus of insects, IX. 216—P.
 paphia, XX. 288—P. cynthia, ib.
 Phalænites, section of moths, IX. 216.
 Phalangians, mammalia, XIV. 175; IV. 260.
 Phalanges of the fingers, III. 34—of the
 toes, 36, 37—in the mammalia, 82—in
 reptiles, 88—birds, 86.
 Phalangista, genus of mammalia, XIV.
 175—dentition of, XVI. 448.
 Phalangium, genus of arachnides, III. 387.
 PHALANX, XVII. 504—Spartan, III. 625—
 Athenian, ib.—Macedonian, 626, 627;
 XIII. 765.
 PHALARIS, XVII. 505—controversy about
 the Epistles of, IV. 188, 658.
 Phalaropes, birds, XVI. 804.
 Phalereus (Demetrius), IV. 699.
 Phaleris, genus of birds, XVI. 810.
 Phalaropus, genus of birds, XVI. 804.
 Phalerum, IV. 172.
 PHALGU, river, XVII. 505.
 Phanæus, genus of insects, IX. 120.
 Phanerogamous plants, V. 76—arrange-
 ment of, 180.
 Phaneromycteres, section of fishes, XII.
 231.

PHA—PHI

Phania, genus of insects, IX. 248.
 Phantasm, Aristotle's notion of, III. 549.
 PHANTASMAGORIA, XVII. 505.
 Phantasmagoric apparatus, XVI. 697.
 Pharamond, X. 2.
 Pharaoh, Egyptian kings, VIII. 457 *et seq.*
 — Egyptian agriculture under, 427.
 Pharaoh-Hophra, VIII. 464.
 Pharaoh-Necho, VIII. 464.
 PHARISEES, XVII. 505. See Sadducees.
 Pharmaceutical Society, XIV. 465.
 Pharmacolite, XV. 96.
 PHARMACOPŒIA, XVII. 506.
 PHARMACY, XVII. 506—characters of abbreviations in, VI. 419.
 Pharmakosiderite, XV. 102.
 PHARNABAZUS, XVII. 506—his invasion of Egypt, VIII. 466.
 Pharnaces, kings of Pontus, XVIII. 292.
 Pharoptyx, genus of fishes, XII. 310.
 PHAROS, XVII. 506; II. 469, 472; VIII. 496; XIII. 463.
 Pharpar, river, II. 9; XX. 904.
 PHARSALUS, in Thessaly, XVII. 506—battle of Pharsalia, XIX. 326.
 Pharyngeal teeth of fishes, XII. 227.
 Pharyngobranchii, sub-order of fishes, XII. 227.
 Pharyngognathi, order of fishes, XII. 264.
 Pharynx, muscles of the, III. 39—*anatomy of the*, 59—in insects, IX. 51.
 Phasaelis, XII. 770.
 Phascogale, genus of mammalia, XIV. 175—*dental system of*, XVI. 447.
 Phascolarctos, dentition of, XVI. 448.
 Phascolomys, XVII. 175—*dentition of*, XVI. 449.
 Phascolosoma, zoophytes, XXI. 987.
 Phascolotherium, fossil mammal, XVII. 158—*jaw and teeth of*, XVI. 448.
 Phasia, genus of fishes, IX. 247.
 Phasianus, genus of birds, XVI. 788.
 Phasingars, XI. 466.
 Phasma, genus of insects, IX. 157.
 Pheasant, XVI. 790; IX. 762; XVII. 633—*shooting of*, XX. 222—*of Nepal*, XVI. 143—*Sumatra*, XX. 804.
 Pheasants, Isle of, XI. 90.
 Phel (M.), blind poet, IV. 780.
 Phenakistoscope, XVI. 697.
 Phenakite, XV. 88.
 PENEUS, in Arcadia, XVII. 506.
 Phengite, mineral, XV. 77.
 Phenicin, VIII. 301.
 PHERECRATES, XVII. 507.
 PHERECYDES, historian, XVII. 507.
 — philosopher, XVII. 507.
 Pheron, XI. 388.
 Phialia, in Arcadia, XVII. 508.
 Phibalura, genus of birds, XVI. 751.
 PHIDIAS, XVII. 507, 54, 81; XIX. 855.
 Phido of Argos, sculptor, XIX. 852.
 PHIGALLA, in Arcadia, XVII. 508.
 Phigalian Marbles, XIX. 856.
 Philadelphaceæ, nat. order of plants, V. 192.
 PHILADELPHIA, city in United States, XVII. 508—*climate of*, 396—*commerce*, 397—*university at*, 398—*Bible Society*, IV. 704—*meteorological observations at*, XIV. 688—*mortality in*, XV. 609—*newspapers of*, XVI. 194—*solitary system of prison discipline at*, XVIII. 571—*bridge over the Schuylkill at*, I. 876—*Washington's retreat to*, XXI. 751—*military operations at*, in 1777, 752.
 — in Asia Minor, XVII. 511.
 Philadelphus, king of Egypt, XI. 391.
 PHILÆ, island in the Nile, XVII. 511—*antiquities at*, VIII. 514.
 PHILÆNI, XVII. 511; VI. 281.
 Philanthropenus, VII. 319.
 Philanthus, genus of insects, IX. 196.
 Philedon, genus of birds, XVI. 753.
 PHILEMON, Greek dramatist, XVII. 511; XIV. 495.
 — and Baucis, IV. 513.
 — Epistle to, XVII. 511.
 Phileremus, genus of insects, IX. 200.
 Philesiaceæ, nat. order of plants, V. 210.
 Philetus of Cos, a dwarf, VIII. 270.
 Phileurus, genus of insects, IX. 122.
 PHILIP, kings of Macedonia, XVII. 511.

PHI—PHI

Philip, father of Alexander the Great, XIII. 762—*his military talents and army*, III. 626—*orations of Demosthenes against*, VII. 728—*his death and character*, XIII. 765—*his war with the Romans*, XIX. 312.
 — kings of Spain, XVII. 511.
 — II. of Spain, XVII. 511—*his policy towards the Netherlands*, XI. 562—*his marriage with Queen Mary*, VIII. 708—*Portugal conquered by*, XVIII. 384—*Prescott's History of*, 504, 505—*reign of*, XX. 469—*character*, 470.
 — III., reign of, XX. 470.
 — IV., reign of, XX. 470.
 — V., reign of, XX. 471.
 — kings of France, X. 12 *et seq.*
 — II. of France, his expedition to the Holy Land, VII. 525.
 — the Arabian, Roman emperor, XIX. 348.
 — the Tetrarch, XII. 772.
 — the Fair, his prosecution of the Templars, XXI. 148.
 Philiphaugh, battle of, V. 407; XX. 40.
 PHILIPPE, kings of France, XVII. 511. See Philip.
 — (Louis), king of the French, X. 202—*his reign*, *ib.*—*visit to England*, in 1845, 222—*abdication*, 236—*death and character*, 238—*conduct at Jemmapes*, 72, *n.*—*public works in Paris executed by*, XVII. 280—*police and press under*, XVIII. 188, 189—*and Talleyrand*, XXI. 14.
 PHILIPPEVILLE, town in Algeria, XVII. 511.
 PHILIPPI, in Macedonia, XVII. 511—*battle of*, XIX. 329.
 — (R. A.), his work on insects, IX. 17.
 PHILIPPICANS, Epistle to the, XVII. 512.
 PHILIPPICS, XVII. 512; VII. 728—*of Cicero*, XIX. 328.
 PHILIPPINES, The islands, XVII. 512—*British expedition against*, in 1762, V. 466—*language of*, XIII. 218—*serpents*, XIX. 53, 54—*weights and measures*, XXI. 813.
 — New, VI. 248. See Caroline Islands.
 PHILIPPOLIS, town in Turkey, XVII. 513.
 PHILIPS (Ambrose), poet, XVII. 513—*his quarrel with Pope*, XVIII. 329.
 — (John), poet, XVII. 514.
 — (Mr.), of Ely, on the culture of the osier, IV. 488.
 — (Robert), on road-making, XIX. 225.
 Philipstown, XII. 92.
 Philistia, XVII. 181, 514.
 PHILISTINES, XVII. 514, 181.
 Philistus, historian, XVII. 515; VIII. 34.
 Phillip (Captain Arthur), governor of New South Wales, IV. 271; XX. 895.
 — (Port). See Victoria.
 Philipps (Sir T.), his library, XIII. 399.
 Phillips (Captain), his improvements on capstans, VI. 224.
 — (Edward), on Milton, XV. 31.
 — (John), of York, description of his electrophorus, VIII. 607.
 — (Prof.), on boulders, VII. 723—*on amber*, II. 655—*on joints in rocks*, XV. 164—*on the Yorkshire oolites*, 207—*his thermometer*, XXI. 224.
 — (RICHARD), chemist, XVII. 515.
 — (SAMUEL), XVII. 515.
 — (THOMAS), portrait-painter, XVII. 515.
 — (WILLIAM), mineralogist, XVII. 516.
 Phillipsite, mineral, XV. 77.
 PHILO JUDÆUS, XVII. 516; XIX. 828, 829.
 — of Byzantium, XVII. 516.
 Philodotus, genus of insects, IX. 128.
 Philodromus, genus of arachnides, III. 382.
 PHILOLAUS, XVII. 516; X. 498—*astronomy of*, III. 788.
 PHILOLOGY, XVII. 517—*contributions to*, by missionaries, XV. 275—*cultivated in Denmark*, XIX. 696—*philological ethnology*, IX. 343—*Rask's services to*, XVIII. 808. See Language, Grammar, PHILOMELA, XVII. 542.

PHI—PHO

Philometor, Egyptian king, XI. 391.
 Philopator, Egyptian king, XI. 391.
 PHILOPOMEN, Greek general, XVII. 542; II. 82; III. 629.
 Philoprogenitiveness, XVII. 562.
 PHILOSOPHER'S STONE, XVII. 542; VI. 437.
 PHILOSOPHY, XVII. 542; XIV. 552—*Aristotle's*, III. 536—*Kant's*, XIII. 46—*Oken on*, XVI. 500—*of history*, XI. 544—*Plato's*, XVII. 792—*requisites of a good history of*, V. 692—*benefits conferred on*, by palæontology, XVII. 91—*as distinguished from philology*, 517—*the scholastic*, 521—*applications of phrenology to*, 565—*positive philosophy*, XVIII. 401—*philosophical speculations a source of corruption to Christianity*, I. 506, 507, 516; reasons why they are all equally wrong, 517—*utility of a life devoted to*, XX. 387. See Cartesian, Experimental, Mental, Moral, Natural, Newtonian Philosophy.
 PHILOSTRATUS, XVII. 543—*his Life of Apollonius of Tyana*, III. 304.
 Philoxenian version of the Scriptures, XIX. 839.
 PHILOXENUS, Greek poet, XVII. 543.
 PHILTER, XVII. 543.
 Philylraceæ, nat. order of plants, V. 213.
 Philypnus, genus of fishes, XII. 307.
 Phiops, Egyptian king, VIII. 455.
 Phipps (Captain J. C.), his Arctic voyage, XVI. 132; XVIII. 170.
 — (William), diving feats of, VIII. 60.
 Phlebenterism, XV. 356, 357.
 Phlebotomies, XVII. 691.
 Phlebotomy. See Blood-letting.
 PHLEGON, Greek historian, XVII. 543.
 PHLIUS, in the Peloponnesus, XVII. 543.
 Phlogopite, mineral, XV. 78.
 Phlox, order of plants, V. 200.
 Phobetor, genus of fishes, XII. 282.
 Phoca, genus of mammalia, XIV. 171.
 PHOCÆA, Ionian city, XVII. 543.
 Phocena, genus of mammalia, XIV. 225.
 Phocas, Greek general, XIX. 469.
 Phocia, planet, IV. 91.
 Phocian war, XIII. 764; XXI. 179.
 PHOCION, Athenian general, XVII. 543; VII. 726; XIII. 765.
 PHOCIS, in Greece, XVII. 543; XI. 12, 18.
 PHŒBUS, XVII. 543. See Apollo.
 PHŒNICIA, XVII. 543, 182; XX. 905—*architecture of*, III. 438—*astronomy*, 783—*commerce*, VII. 184; in the Black Sea, IV. 745; with Britain, V. 376—*Sanchoniatho's History of*, VII. 580—*dyeing*, VIII. 272—*alphabet*, II. 612—*language*, XIII. 209—*mythology*, XV. 765—*coins*, XVI. 359, 379—*art*, XVII. 48—*sculpture*, XIX. 847.
 Phœnicians, history of, XX. 905—*in Cornwall*, VII. 407; in Ellis, VIII. 634; *Palestine*, XVII. 192; *Mauretania*, XIV. 360—*their knowledge of geography*, X. 460—*sacrifice of human victims*, XIV. 361—*voyages*, XVIII. 161 and *n.* 2; X. 460; XVI. 1; XXI. 26—*shipping*, XX. 117—*tombs and antiquities*, 269; in Spain, 457—*colonies planted by*, 906—*their religion*, *ib.*—*literature and art*, *ib.*
 Phœnicophæus, genus of birds, XVI. 778.
 Phœnicopterus, genus of birds, XVI. 808.
 Phœnikochroite, XV. 106.
 Phœnix cycle, VIII. 451.
 — Islands, XVIII. 278.
 — Park, Dublin, VIII. 219.
 Pholadidæ, family of mollusks, XV. 352—*fossil*, XVII. 108.
 Pholadomya, genus of mollusks, XV. 350—*fossil*, XVII. 108.
 Pholas, genus of mollusks, XV. 352, 347—*P. dactylus*, 352—*its luminous properties*, XIII. 457—*in Malta*, XIV. 115.
 Pholcus, genus of arachnides, III. 380.
 Pholerite, mineral, XV. 79.
 Pholidophorus, genus of fossil fishes, XII. 335.
 Pholierus, genus of insects, IX. 121.
 Pholis, genus of fishes, XII. 309.
 Phonetic characters, XI. 370; II. 607; XX. 676.

PHO—PHR

Phonetic signs, XI. 418.
 Phonogram, XX. 676.
 Phonography, XX. 676.
 Phonolite, XV. 132.
 Phonotypy, XX. 676.
 PHOOLGHUR, in India, XVII. 543.
 Phora, genus of insects, IX. 258.
 Phormium tenax. See New Zealand Flax.
 Phorus, genus of mollusks, XV. 382.
 Phosgenite, mineral, XV. 105.
 Phosphate of lime, VI. 478—*as manure*, II. 415—*phosphates indispensable to the growth of plants*, VI. 523.
 Phosphorescence, of minerals, XV. 59—*of the sea*, XVII. 574; XXI. 998—*Becquerel's explanation of the phenomena of*, 632.
 Phosphorescent bodies, XIII. 456, 458; X. 409—*spider's eyes*, III. 378, *n.*—*Canton's phosphorus*, VI. 202—*certain crustacea*, VII. 539—*annelides*, XI. 293—*glowworm*, IX. 107—*fireflies*, 106, 168—*medusidæ*, XXI. 998—*is the moon phosphorescent?* IV. 41—*effects of electricity on*, VIII. 598.
 Phosphoric acid, VI. 479; XV. 64—*in plants*, II. 388.
 Phosphorists of Sweden, XIX. 700.
 Phosphorite, XV. 94; XIII. 457.
 Phosphorochalcite, XV. 103.
 Phosphorous acid, VI. 479.
 PHOSPHORUS, XVII. 543; VI. 478—*terchloride of*, 480—*perchloride of*, 481—*how to inflame it by electricity*, VIII. 590—*specific gravity of*, XII. 89—*its poisonous quality*, XIV. 435—*its use in making matches*, 352—*red*, or *amorphous*, *ib.*—*phosphorus electrometer*, VIII. 622.
 Phosphurets. See Chemistry.
 Phosphuretted hydrogen, VI. 480—*sometimes found in the atmosphere*, II. 376.
 PHOTIUS, XVII. 543; XI. 34—*Lexicon of*, XVIII. 367, 369.
 PHOTO-GALVANOGRAPHY, XVII. 544.
 Photo-lithography, XIII. 514.
 Photo-metallography, XVII. 544.
 Photo-zincography, XXI. 337.
 PHOTOGLYPHIC ENGRAVING, XVII. 544.
 PHOTOGRAPHY, XVII. 544—*history of*, I. 922—*importance of*, 924—*use of gun-cotton in*, XI. 95—*employed for registering observations*, XIV. 666—*employed in micrometers*, 745, 746, 759, 761—*its application to the microscope*, 801—*employed in detecting criminals*, XVIII. 190—*its use in taking stereoscopic pictures*, XX. 690—*its use in the trigonometrical survey*, XXI. 336.
 PHOTOMETER, XVII. 555; VI. 781; X. 429; XIII. 454, 455.
 Photometry, XVI. 535—*first notions of*, I. 753—*advanced by Bouguer*, *ib.*—*Lambert's treatise on*, 754.
 Phoxichilus, genus of arachnides, III. 386.
 Phraates, XVII. 310.
 Phractocephalus, genus of fishes, XII. 261.
 Phragmoceras, fossil mollusks, XVII. 112.
 Phraortes, XIV. 421; XVII. 434.
 PHRASE, in music, XVII. 556; XV. 719.
 Phraseogram, XX. 676.
 Phraseography, XX. 679.
 PHRASING, in music, XVII. 556.
 Phre, Egyptian deity, XI. 382.
 Phrenic nerve, III. 58.
 Phrenitis, in animals, XXI. 575.
 Phreno-mesmerism, XX. 440.
 PHRENOLOGY, XVII. 556—*origin of*, X. 382—*division of the mental faculties*, XVII. 673; *objections to*, *ib.* See Gall, Spurzheim.
 PHRIXUS, XVII. 568; XI. 290.
 Phryganea, genus of insects, IX. 180—*their use in angling*, III. 149.
 PHRYGIA, in Asia Minor, XVII. 568—*coins of*, XVI. 378.
 Phrygian language, XIII. 200, 210.
 — mode, in music, XV. 707.
 Phryne, courtesan, XVIII. 451.
 PHRYNICHUS, tragic poet, XVII. 568.
 — comic poet, XVII. 568.
 — ARHABBIUS, grammarian, XVII. 568.

PHR—PHY

- Phrynichus, Athenian, IV. 207.
 Phrynus, genus of arachnides, III. 384.
 Phthah, Egyptian deity, XI. 381—temple of, XIV. 493.
 Phthiria, genus of insects, IX. 233.
 Phthisis, or pulmonary consumption, case of its cure by riding, XI. 673—effect of the climate of Egypt on, VIII. 423—unknown in very elevated regions, XVII. 611—Dr Rush on, XIX. 466—in the domestic animals, XXI. 573.
 Phucocætes, genus of fishes, XII. 310.
 PHUKOK, island, XVII. 568.
 PHULOWDEE, town in India, XVII. 568.
 Phut, VIII. 46.
 Phycis, genus of fishes, XII. 270.
 —genus of insects, IX. 218.
 PHYLAERY, XVII. 568.
 Phylactolamata, zoophytes, XXI. 1001.
 Phyle, castle near Athens, IV. 209.
 Phyllidia, genus of mollusks, XV. 371.
 Phyllium, genus of insects, IX. 157.
 Phyllobius, genus of insects, IX. 139.
 Phyllocharis, genus of insects, IX. 149.
 Phyllodoce, genus of annelides, XI. 298.
 Phylodius, genus of fossil fishes, XII. 338; XVII. 128.
 Phyllolepis, genus of fossil fishes, XII. 337; XVII. 125.
 Phyllopa, genus of crustacea, VII. 543.
 Phyllopertha, genus of insects, IX. 125.
 Phyllophagi, section of insects, IX. 123.
 Phyllopteryx, genus of fishes, XII. 315.
 Phyllostoma, genus of mammalia, XIV. 148.
 Phyllotaxis, in botany, V. 85.
 Phyllurus, genus of reptiles, XIX. 37.
 Physa, genus of mollusks, XV. 374—fossil, XVII. 111.
 Physaloptera, zoophytes, XXI. 981.
 Physcon, king of Egypt, VIII. 469—his cruelties at Alexandria, II. 470.
 Physeter, genus of mammalia, dentition of, XVI. 444.
 PHYSHARMONICA, XVII. 568.
 Physic, inclusive of Surgery, XIV. 448—theory and practice of, ib. See Medicine.
 Physical argument for the existence of God, XXI. 186.
 —Education, XV. 810.
 —Science. See Physics.
 —GEOGRAPHY, XVII. 569; X. 459—the Alps, II. 623—snow-line, 625. See Snow-line. Andes, III. 127—glaciers, II. 625; X. 633—climate of America, II. 673 *et seq.*—Arabia, III. 341—Asia, 736—Africa, II. 215—distribution of American forests, 672—distribution of plants, V. 219 *et seq.*—of animals, III. 174—the crustacea, VII. 540—of insects, IX. 63—of fishes, XII. 329—of reptiles, XIX. 15, 30, n. 4, 50—of the Arctic Polar Basin, XVIII. 175—greater warmth of the northern than of the southern ocean, II. 673—modifying influence of climate, &c., on animals, III. 173, 174—influence of the ocean on climate, 737. See Climate, Cloud, Cold, Complexion, Evaporation, Heat, River, and the geographical and natural history articles generally.
 Physicians, XIV. 448—Chinese, VI. 585—naval, XVI. 114—Edinburgh College of, VII. 114; VIII. 400—London College of, VII. 113; XIII. 672; its foundation by Linacre, XIV. 459, 460; decay of its influence, 466—Dublin College of, VIII. 223—diseases of, XIV. 442—qualifications of, for the treatment of mental disease, 538—should be acquainted with surgery, XX. 809—are not unproductive labourers, XVIII. 258.
 PHYSICS, XVII. 647; XIV. 448—dissertations on physical science, I. 549, 799—experimental, 800—different meanings of the word, 9, 10—should be confined to the phenomena of matter, 10—ancient physics, 565—modern, 569—Aristotle on, III. 541—among the Druids, VIII. 185—connection with mathematics, I. 805, 806—relation of, to engineering, 865—knowledge of,

PHY—PIC

- desirable for the study of theology, XXI. 182. See Astronomy, Mechanics, Optics, Dynamics, Hydrostatics, Hydrodynamics, Acoustics, Magnetism, Electricity, Heat, &c.
 PHYSIOGNOMY, XVII. 647—of vegetation, in different quarters of the globe, V. 223—phrenological, XVII. 561—regarded by the Athenians as an index of character, XX. 378.
 PHYSIOLOGY, XVII. 648; XIV. 462, 463—sense in which Dr Campbell employs the word, I. 9—province of, II. 748—breeding of horses and cattle, 338, 341—Barthez's works on, IV. 481—vital, natural, and animal functions, II. 119—John and William Hunter's contributions to, XII. 27; XIV. 462—benefits it derives from palæontology, XVII. 91—of plants, V. 65 *et seq.*—Haller's contributions to, XIV. 462—aid afforded to natural history by, III. 172—of the crustacea, VII. 537. See Animal Kingdom, Anatomy, Dietetics, Blood, Digestion, &c.
 Physodon, sub-genus of fishes, XII. 323.
 Physograda, zoophytes, XXI. 1001.
 Physonemus, genus of fossil fishes, XVII. 117.
 Physophoridae, zoophytes, XXI. 1006.
 Phytolaccaceæ, nat. ord. of plants, V. 204.
 Phytomyza, genus of insects, IX. 257.
 Phyton, in botany, V. 141.
 Phytozoa, V. 143.
 Piabuca, genus of fishes, XII. 246.
 Piabucina, genus of fishes, XII. 246.
 PIACENZA, town in Italy, XVII. 703—university of, XXI. 492.
 Piaggi (Antonio), XI. 345.
 Piahaus, birds, XVI. 750.
 Pia mater, cerebral membrane, III. 56, 105.
 PIANO-FORTE, XVII. 703; XI. 231; XV. 740—ivory keys of, XII. 664.
 PIANOSA, island, XVII. 705.
 Piastra, XV. 445.
 PIAUHI, or Piauh, in Brazil, XVII. 705; V. 295.
 Piauzite, mineral, XV. 124.
 PIAZZA, town in Sicily, XVII. 705.
 PIAZZETTA (G. Batista), painter, XVII. 705.
 PIAZZI (Giuseppi), XVII. 705; III. 807—astronomical labours of, 808—his discovery of Ceres, I. 835; IV. 67; III. 808—his catalogue of stars, I. 836; IV. 80.
 PICA, XVII. 705. See Mirandola.
 —, type, IV. 707; XXI. 401, 403—double, XVIII. 536—casting up of a sheet of, 541.
 —genus of birds, XVI. 764.
 PICARD (Jean), XVII. 705—measurement of an arc of meridian by, I. 618; IX. 548—on the earth's annual motion, II. 36—his astronomical labours, III. 802—editor of the *Connaissance des Temps*, 814.
 —(LOUIS-BENOIT), dramatist, XVII. 705.
 PICARDS, religious sect, XVII. 706; II. 128.
 PICARDY, in France, XVII. 706; X. 276—horses of, XI. 661.
 PICCINI (Nicolo), XVII. 706—on harmony, XV. 730—on modulation, 733.
 PICCOLOMINI (Alessandro), XVII. 706.
 —(FRANCESCO), XVII. 706.
 PICENUM, in Italy, XVII. 706.
 PICERNO, town of Naples, XVII. 707.
 PICHEGRU (Charles), General, XVII. 707; V. 554; X. 82, 87 *et seq.*, 129—death of, 131—his invasion of Holland, XI. 579.
 Picher-Grandchamp on Mesmerism, XX. 419.
 Pichihucu, Chilian fish, VI. 550.
 PICKERING, town in Yorkshire, XVII. 707.
 Picking, process in woollen manufacture, XXI. 923.
 Pickles, making of, IX. 767—adulterations of, 770.
 Pickling timber, XX. 167.

PIC—PIK

- Pico, island, XVII. 707; IV. 336.
 Picoides, genus of birds, XVI. 777.
 Picropharmacolite, XV. 96.
 Picrophyll, mineral, XV. 80.
 Picrosmine, mineral, XV. 80.
 Pictet (Marc-Auguste), I. 943—his Essay on fire, ib.—on the radiation of heat, XI. 262—his experiments on the reflection of cold, VII. 100.
 —(F. J.), his works on insects, IX. 17.
 PICTOR (Fabius), XVII. 707; IX. 460.
 PICTOU, in Nova Scotia, XVII. 707; XVI. 343.
 PICTS, XVII. 707; VI. 74; VIII. 794; XIX. 743—their wars with the Romans, V. 380—Picts' houses, III. 421—their dominion in Scotland, XIX. 742—conversion of the northern, 744—their disappearance as a people, ib.
 PICTURE, XVII. 707—mosaic pictures, XV. 653. See Painting.
 PICTURESQUE, XVII. 707; IV. 553.
 Picture-writing, Mexican, II. 684, 695.
 Picumnus, genus of birds, XVI. 777.
 Picus, genus of birds, XVI. 774.
 Piddington (Mr), on cyclones, XIV. 649.
 Piddocks, shell-fish, XV. 352.
 Piece work, hiring by, XXI. 678.
 PIEDMONTE, town of Naples, XVII. 707.
 PIEDMONT, principality of, XVII. 707—coins of, XV. 442, 444—climate of, XII. 638; XIX. 633—military insurrection in, 655—military character of the Piedmontese, III. 655—savings-banks, XIX. 674—silk produced in, XX. 278.
 PIERIDES, XVII. 708.
 Pierron (Alexis), on Homer, XI. 602.
 Pieris, genus of insects, IX. 207.
 Pieri's Flora Corcirenensis, XII. 451, n. 6.
 PIERRE (J. H. Bernardin de St), XVII. 708—his tales, XIX. 289.
 —D'OLERON, town in France, XVII. 708.
 —(St), island, XVII. 708.
 —(St, le Sieur de), on the longitude, XIII. 686.
 —(St), town in Martinique, XVII. 708; XIV. 322.
 PIERRE-LES-CALAIS, town in France, XVII. 708.
 Piers, in architecture, III. 511—suspension, XI. 223—timber, 224—in embankments, VIII. 646—for entrances to rivers, XVI. 83.
 Piers Plowman's Visions, XIII. 184.
 Piesse (Mr), on perfumery, XVII. 409.
 Pietermaritzburg, in Natal, XV. 805.
 PIETISTS, German sect, XVII. 708—originated with Spener, XX. 505.
 PIETRA DE FUSI, town of Naples, XVII. 708.
 PIETRAPERZIA, town in Sicily, XVII. 708.
 Pietro of Cortona, painter, XVII. 73.
 PIGALLE (Jean Baptiste), sculptor, XVII. 708.
 Pigeaire (Mlle.), mesmeric somnambulist, XX. 430.
 PIGEON, XVII. 708, 633; XVI. 793, 794—its flesh, IX. 762—carunculated, XVI. 794—great crowned, ib.—hackled, ib.—Nicobar, ib.—parabolic, ib.—passenger, ib.—rock, 793—wood, ib.—carrier, VI. 275—dung of, as manure, II. 411—wood-pigeon shooting, XX. 216.
 PIGHIUS (Albert), XVII. 708.
 —(STEPHANUS VINAND), antiquary, XVII. 709.
 Pig-iron, XII. 533 *et seq.* See Smelting.
 Pigment cells, XVII. 650.
 Pigments. See Colours—Pigmentary principles, in physiology, XVII. 655—pigmentary degeneration, 690, 696.
 Pigmentum nigrum of the eye, III. 43.
 Pignerol, XVII. 712.
 PIGNOTTI (Lorenzo), XVII. 709.
 Pigot (Lord), XI. 492; V. 777.
 Pigs, II. 355—breeds and management of, ib.—of Hampshire, XI. 204. See Hog.
 Pig-tail tobacco, XXI. 296.
 Pika, in zoology, XIV. 188.
 PIKE, fish, XVII. 709; XII. 253—its flesh, IX. 764—chemical composition of the

PIK—PIN

- teeth of, XVI. 418—angling for, III. 158—sea-pike, IX. 764—saury-pike, XII. 264.
 Pike, Roman weapon, III. 633.
 Pila, Russian town, XIX. 728.
 PILAO-ARCAO, town in Brazil, XVII. 709.
 Pilasters, in architecture, III. 478, 487, 511—in joinery, V. 752.
 PILATE (Pontius), XVII. 709; XII. 772—his alleged letter to Tiberius, XII. 761.
 PILATRE DE ROZIER (J. François), XVII. 709; II. 175, 177—death of, 179.
 PILCHARD, XVII. 709; XII. 236; IX. 763—used as manure, VII. 407.
 Pilchard-fishery, IX. 643—in Cornwall, VII. 408—England, VIII. 727.
 PILCOMAYO, river, XVII. 709, 647; IV. 823.
 Pile of Volta, I. 964—his description of it, ib.—history of, 966—theory of, 978—its fitness for telegraphs, XXI. 99—its properties and effects, 609 *et seq.*—in heraldry, XI. 330—funeral-pile, X. 344.
 Pileolus, fossil mollusks, XVII. 109, 111.
 Pileoma, genus of fishes, XII. 277.
 PILES (Roger de), XVII. 709—his account of a blind portrait-painter, IV. 781.
 —stakes for foundations, XX. 722—of iron, 723—screw, ib.—pile-engine, 722.
 PILEUS or Pileum, XVII. 709.
 —in mushrooms, V. 146, 147.
 Pile-worms, XV. 353. See Tereido.
 Pilgrim tax, abolition of in India, XIII. 15.
 Pilgrimage to Mecca, XIV. 379—to the tomb of the prophet Hud, III. 358—to Jerusalem, XII. 734—pilgrimages of the Hindus, XI. 469.
 Pilkington on Carlo Dolci, VIII. 92.
 PILLAR, XVII. 709; III. 511. See Column, Towers (Round).
 —Saints, XX. 785.
 PILLAU, town in Prussia, XVII. 709.
 PILLEEBHEET, town in India, XVII. 709.
 Pillersdorf (Baron), on the state of Austria, IV. 306.
 Pillischer (Mr) his microscopes, XIV. 780.
 PILLORY, XVII. 710; XVIII. 575.
 Pillow-lace, XIII. 142.
 Pillowed, in architecture, III. 512.
 Pilnitz, treaty of, V. 540; X. 61.
 Pilori, in zoology, XIV. 181.
 PILOT, XVII. 710.
 Pilot-fish, XII. 294.
 Pilpay, Hindu author, IV. 719—his Indian fables, XIII. 78.
 PILSEN, town in Bohemia, XVII. 710.
 PILUM, XVII. 710; III. 633.
 Pimelepterus, genus of fishes, XII. 302.
 Pimelia, genus of insects, IX. 129.
 Pimeliariae, tribe of insects, IX. 129.
 Pimelite, mineral, XV. 84.
 Pimelodus, genus of fishes, XII. 262.
 PIMENTO, XVII. 710; V. 192; XII. 679, 681—oil of, XVI. 496—imports of, VIII. 735.
 PIMLICO, suburb of London, XVII. 710.
 Pimpla, genus of insects, IX. 189.
 Pin (M.), his hydraulic experiments, XII. 113.
 Pin, in lace making, XIII. 142.
 Pin-wheels, XIV. 396.
 Pinaceæ, nat. ord. of plants, V. 209.
 Pinaster, XVII. 757.
 PINCHBECK, XVII. 710; V. 276; XVIII. 516.
 Pinchincha, remarkable halo observed on, VII. 411.
 Pinchinin, Algerine admiral, II. 570.
 Pincian Hill, XIX. 356.
 Pinçon (Vincent Yanez), Brazil discovered by, V. 279—entered the Rio de la Plata in 1508, II. 699.
 PIND-DADUN-KHAN, town in India, XVII. 710.
 PINDAR, XVII. 710—his poems, XVIII. 102.
 Pindaree war, XI. 508; XIV. 120.
 PINDEMONTE (Ippolito), poet, XVII. 712.
 PINDUS, mountain, XVII. 712; XI. 10,

PIN—PIP

- 13—mountain chain of, XVII. 596; XXI. 376—height of, XVII. 642.
 Pine, order of plants, V. 209.
 Pineal gland, III. 54.
 Pine-apple, order of plants, V. 212—culture of the pine-apple, XI. 730—fibre of, XXI. 782.
 Pineau (Severin), on legal medicine, XIV. 422.
 Pine-barrens, XVII. 627.
 Pine-trees, XVII. 754 *et seq.*—pistillate flower of, V. 134—propagation of by seeds, XVII. 767—Norfolk-Island pine, III. 396; V. 209; XVI. 291—araucanian, VI. 549—Kaurie or Cowdie, V. 209—Norwegian, XVI. 323—Californian, XVII. 626—Himalayan, XI. 444—pine timber, XXI. 274, 275—seasoning of, XX. 168, 170—strength, 171. See Fir, Timber.
 Pinel (M.), on the connection of insanity with liability to see apparitions, III. 320—his manner of treating insanity, XIV. 523—on cretins, VII. 496.
 PINEROLO, XVII. 712.
 Pine's edition of Horace, IV. 707.
 PINGRE (Alexandre-Gui), astronomer, XVII. 712.
 Pinguipes, genus of fishes, XII. 273.
 Pinguite, mineral, XV. 90.
 PINION, in mechanics, XVII. 713.
 Pinite, mineral, XV. 89.
 Pink, dyeing of, VIII. 317.
 —, plant, V. 184—culture of, XI. 754—sea-pink, V. 203; XI. 748.
 PINKAFELD, town in Hungary, XVII. 712.
 PINKERTON (John), XVII. 712—on Barbour's Bruce, IV. 436—on Dunbar's poetry, VIII. 247, 250—on the Scottish language, 798, n. 3—on the feudal system, IX. 520—on the Sestertius, XV. 433, n. 10.
 Pinkey, battle of, XIX. 778.
 Pin-money, XVII. 713.
 Pinna, genus of mollusks, XV. 348—fossil, XVII. 106.
 PINNACE, XVII. 713; IV. 800.
 PINNACLE, XVII. 713; III. 512, 480 *et seq.*
 Pinnata, family of mollusks, XV. 400.
 Pinnigrada, echinoderms, XXI. 984.
 Pinning, in carpentry, V. 747.
 Pinnipedia, tribe of mammalia, XIV. 153.
 Pinnotheres, genus of crustacea, VII. 541.
 Pinophilus, genus of insects, IX. 103.
 PINS, XVII. 713—manufacture of, at Birmingham, IV. 732.
 PINSK, town in Russia, XVII. 714.
 Pin-tails, birds, XVI. 818.
 PINTELLI (Baccio), architect, XVII. 714.
 Pinto (General), VI. 553.
 — (Mendes), his *Perigrinaçam*, XVIII. 399.
 PINTURICCHIO (Bernardino), XVII. 714.
 PINUS, XVII. 714. See Pine Trees.
 Pinzon (Martin Alonso), II. 699.
 Piobert on combustion, XI. 114.
 PIOMBINO, in Tuscany, XVII. 714.
 PIOMBO (Fra. Sebastiano del), XVII. 714. See Sebastiano.
 Piophila, genus of insects, IX. 253.
 PROVE-DI-SACCO, town in Italy, XVII. 714.
 PROZZI (Hester Lynch), XVII. 714—Dr Johnson's intimacy with, XII. 800.
 Pipa, genus of reptiles, XIX. 81.
 PIPE, musical instrument, XVII. 714—pipes of an organ, XVI. 710.
 PIPE-OFFICE, XVII. 714.
 Pipes, transmission of sound through, II. 99—boring of stone and wooden, V. 44, 45—motion of water in, XII. 111, 131, 133, 136—pressure upon, by the water flowing through them, 135—Bramah's patent for water-pipes, V. 274—for house drains, 735; VIII. 128—for draining, 134—conduit pipes, in gas making, X. 414—gas-pipes, 420—cast-iron pipes for conveying water, III. 337—motion of air in, I. 726; XVIII. 61—stronger than solid rods containing the same quantity of matter, XX. 766. See Aqueduct.
 Pipe-clay, XV. 83, 142; XVIII. 438.

PIP—PIT

- Pipe-fishes, XII. 314.
 Piperaceæ, nat. ord. of plants, V. 207—region of, 228; XVII. 628.
 PIPERS, XVII. 714.
 Pipestone, XV. 84.
 Pipit, bird, XVI. 757.
 Pipiza, genus of insects, IX. 239.
 Pipra, genus of birds, XVI. 757.
 Pippul, tree, IX. 537—worshipped by the Buddhists, X. 723.
 Pipunculus, genus of insects, IX. 242.
 Piracy, XIII. 285, 288—Algerine, II. 568 *et seq.*; IV. 431—Berbers addicted to, XV. 595—efforts of the Hanseatic League to extirpate, XI. 214. See Corsair, Pirate.
 PIREUS, port of ancient Athens, XVII. 715; IV. 171, 174—improved by Themistocles, 200.
 —, seaport of modern Athens, XVII. 715.
 Piran Round, primitive theatre of, XXI. 164.
 PIRANESI (G. Battista), engraver, XVII. 715.
 PIRANO, Austrian town, XVII. 715.
 PIRATE, XVII. 715; V. 709; VII. 416. See Piracy.
 Pirene, spring, VII. 367.
 PIRMASENS, town in Bavaria, XVII. 715.
 PIRNA, in Saxony, XVII. 715.
 Pirogue, canoe, IV. 800.
 PIRON (Alexis), poet, XVII. 715.
 PIR-PANJAL, mountain range, XVII. 715.
 PISA, XVII. 716—cathedral of, III. 447, 517—commerce of, VII. 186—a rival of Genoa, X. 453—school of painting, XVII. 60, 61—university of, XXI. 492.
 — (LEONARDO), XVII. 717; II. 483.
 Pisander, IV. 207.
 PISANO (Andrea), sculptor, XVII. 717; XIX. 860.
 — (NICCOLA), sculptor, XVII. 717, 716; XIX. 860.
 — (N. and G.), painters, XVII. 61.
 Pisaurum, ancient town. See Pesaro.
 Pisces, constellation, IV. 80.
 PISCINA, XVII. 717.
 PISEK, town in Bohemia, XVII. 717.
 PISIDIA, in Asia Minor, XVII. 717—coins of, XVI. 377.
 Pisidium, genus of mollusks, XV. 350.
 PISISTRATUS, XVII. 717—State of Athens under, IV. 160—his government and character, 196, 197—first collected the poems of Homer, XI. 598.
 Pisodus, genus of fossil fishes, XII. 338; XVII. 128.
 Pisolite, mineral, XV. 92, 147.
 Pisolitic chalk, XV. 211.
 Pison, genus of insects, IX. 196.
 Pisodonophis, genus of fishes, XII. 233.
 Pissophane, mineral, XV. 101.
 Pistachio nut, V. 190; XVI. 395—its oil, XIII. 169.
 Pistazite, mineral, XV. 85.
 Pistaceæ, nat. ord. of plants, V. 214.
 PISTICCIO, town in Naples, XVII. 718.
 Pistil, in botany, V. 117, 129—transformations of, 133.
 PISTOJA, town in Tuscany, XVII. 718.
 Pistole, XV. 441, 442.
 Pistolograph, XX. 691.
 Pistols, manufacture of, XI. 100—electrical, VIII. 626.
 Pistomasite, mineral, XV. 92.
 PISTON, in pump-work, XVII. 718—comparative motion of two pistons, XIV. 386—of steam-engine, XX. 589 *et seq.*—velocity of, 645—in merchant steamers, and Government screw-steamers, 646—high speed now used, 655.
 PISTOSAURUS, fossil reptiles, XVII. 144.
 Pitard, French surgeon, XX. 816.
 PITCAIRN ISLAND, XVII. 718; XVIII. 282—inhabitants of, settled in Norfolk island, XVI. 291.
 PITCAIRNE (Archibald), physician, XVII. 719; XIV. 460.
 Pitcaithly, in Perthshire, XVII. 457.
 PITCH, XVII. 719; XVI. 100; XXI. 21—specific gravity of, XII. 88—mineral, IV. 736—as a polisher of specula, XXI.

PIT—PIU

- 136—pitch-lake in Trinidad, XVI. 100; XVII. 602; XXI. 352.
 Pitch, of a roof, XIX. 373.
 Pitch-blende, XV. 111.
 Pitcher-plant, V. 93, 205—analysis of the water in the pitcher, 104—in Ceylon, VI. 394—of Java, XII. 704.
 —, order of plants, V. 205.
 Pitches, in mining, XV. 224.
 Pitching of a ship, XX. 153, and n. 1—pitching and scending, 161.
 Pitch-oil, X. 433.
 Pitch-pine, specific gravity of the wood, XII. 89.
 Pitchstone, XV. 72, 134.
 PITEA, in Sweden, XVII. 719.
 Pith of plants, V. 81; XXI. 267.
 Pithecia, genus of mammalia, XIV. 144.
 Pithecus, genus of mammalia, XIV. 138.
 PITHIVIERS, town in France, XVII. 719.
 PITHOU (Pierre), XVII. 719.
 PITRIS (Samuel), philologist, XVII. 720.
 —, mathematician, X. 505—on the arithmetic of sines, II. 547.
 Pitkin on the imports of the United States, IX. 436.
 PITOT (Henri), XVII. 720—his theory of centres, VI. 373—his tube, XII. 142—on hydraulics, 143; XIX. 186—on the strength of materials, XX. 757, 759.
 PITS (John), biographer, XVII. 720.
 PITT (Christopher), poet, XVII. 720.
 — (WILLIAM), Earl of Chatham, XVII. 721—his administration, V. 463 *et seq.*—resignation, 465—created Earl of Chatham, ib.—his reappearance in Parliament, 478—his plan for terminating the American war, ib.
 — (WILLIAM), son of the preceding, XVII. 727—his plan of parliamentary reform, V. 507, 515—his administration, 511—India Bills, ib.; 513; XI. 497—refusal to resign, V. 511—plan of a commercial union between Great Britain and Ireland, 516—sinking fund, 518; X. 329, 339—commercial treaty with France, V. 522; VII. 195—on the regency question, V. 531, 532—his administration in reference to Ireland, 533—on the slave trade, ib.; XX. 322—on increasing the army, V. 535—his policy in reference to the French revolution, 536—on the corporation and test acts, ib.—his bill for regulating the government of Canada, 537—on Mr Grey's motion for parliamentary reform, 542, 543, 549—his support of the war with France, 548, 552, 556—bill to increase the navy, 562—duel with Mr Tierney, 563—income-tax, 566—proposal of union between Britain and Ireland, 566, 572—on the expediency of continuing the war with Bonaparte, 571—end of his administration, 575—his character as a statesman, 576—on Catholic emancipation, 578, 624—on the peace of Amiens, 586—his return to power in 1803, 597—his death, 599—payment of his debts, ib.—financial measures, VII. 190—blundering policy in 1805, X. 137—his proposed tax on coal, XII. 573—duty on tea reduced by, XXI. 71.
 Pitt-Diamond, VIII. 3, 4; XVII. 721.
 Pitta, genus of birds, XVI. 753.
 PITTACUS, Grecian sage, XVII. 744.
 PITTENWEEM, XVII. 744.
 Pitticite, mineral, XV. 101.
 Pittinerz, mineral, XV. 111.
 Pittosporaceæ, nat. ord. of plants, V. 188.
 PITTS (William), XVII. 745.
 PITTSBURGH, in Pennsylvania, XVII. 745—climate of, 396—glass manufacture, ib.—commerce, 397.
 Pity, I. 383.
 Pitylus, genus of birds, XVI. 761.
 PIURA, town in Peru, XVII. 746, 474.
 PIUS I., Pope, XVII. 746.
 — II., XVII. 746.
 — III., XVII. 746.
 — IV., XVII. 747.
 — V., XVII. 747.
 — VI., XVII. 747.

PIU—PLA

- PIUS VII., XVII. 747—Jesuitism restored by, XII. 756.
 — VIII., XVII. 747; XII. 656.
 — IX., XII. 656—his retirement to Gaëta, 658—and return, 659.
 Pivots, friction of, XIV. 406—Coulomb on the friction of, VII. 464—Schieles' pivot, XIV. 406.
 Pixii (Hippolyte), on magneto-electricity, VIII. 532—his magneto-electric machine, XXI. 646.
 Pizarro (Francis), II. 596—his conquest of Peru, XVII. 463—Lima founded by, XIII. 486.
 Pizzo (Il), Italian city, XVII. 747.
 Placcius (Vincent), on anonymous books, IV. 711.
 Placenta, III. 72; XVII. 688.
 —, in botany, V. 130.
 PLACENTIA, XVII. 747. See Piacenza.
 —, in Spain, XVII. 748.
 Placodus, fossil reptiles, XVII. 145.
 —, genus of fossil fishes, XII. 337; XVII. 125.
 Placogonoides, fossil fishes, XVII. 120.
 Placoid, order of fishes, XII. 217—fossil, 333, 339.
 Placuna, genus of mollusks, XV. 348.
 Placunopsis, fossil mollusks, XVII. 105.
 Pladda, island, VI. 28.
 PLAGIARY, XVII. 748.
 Plagiarism, XVII. 748—charges of, against Middleton, IV. 637; Coleridge, VII. 111; Paley, XVII. 204, n.; XVI. 263; Sterne, XXI. 693.
 Plagiaulax, fossil mammals, XVII. 161.
 Plagionite, mineral, XV. 119.
 Plagiostoma, fossil mollusks, XVII. 106.
 Plagiostomi, family of fishes, XII. 323—fossil, 340; XVII. 116.
 PLAGUE, XVII. 748—at Aleppo, II. 463—at Athens, IV. 204—in Egypt, II. 22; VIII. 422—England, IX. 320—London, V. 423; XIII. 659; effect of, on the religious feelings of the people, I. 461—at Birmingham in 1665, IV. 729—Edinburgh, VIII. 391—Glasgow, X. 646—Marseille, XIV. 316—Milan, XV. 2—Perth, XVII. 452—Rome, XIX. 344—Black Death in 14th century, XXI. 944 and n. 2.
 Plagues of Egypt, design of, I. 457—the plague of blood supposed to have been produced by infusoria, III. 210.
 Plagusia, genus of fishes, XII. 272.
 Plance, fish, IX. 764.
 Plaiding, XIX. 805.
 Plaine, a district in Vendée in France, XXI. 534.
 Plains—maritime plain of Syria, XX. 902—of Bagota, IV. 808—of northern and eastern Europe, XVIII. 662; XVII. 609—among the Himalayas, XI. 441—in China, XVII. 610—India, ib.—Java, XII. 703.
 Plakodine, mineral, XV. 116.
 PLAN, XVII. 752—in architecture, III. 512.
 Plana (M.), on electricity, VIII. 533—his lunar theory, I. 825—his skill as a calculator, 826.
 Planaria, zoophytes, XXI. 976.
 Planceer, in architecture, III. 512.
 PLANE, in geometry, XVII. 752; X. 532—properties of, 556—in joinery, XII. 807.—charts, VI. 426.
 —, order of plants, V. 208.
 Plane-trees, XVII. 765—wood of, XXI. 278.
 PLANET, XVII. 753, IV. 3, 51, 89—Herschel's observations on, I. 840—aberration of the planets, II. 38—optic equations, 50—acceleration, 74—perturbations, I. 811; III. 809; IV. 61—invariability of mean distances, III. 811—motions, IV. 4, 51—inferior and superior, 52—stations and retrogradations, ib.—effect of the earth's motion on their appearances, 54—their orbits, 57, 62—transits over the sun's disk, 62—constitution, magnitude, and rotation, 65—relation of the numbers which express their distances from the sun,

PLA—PLA

73—forces which retain them in their orbits, 97—small planets between Mars and Jupiter, 91—forces which disturb their elliptic motion, 102—Euler on the inequalities of their motions, IX. 373—disturbance produced by their mutual action, IV. 106—their disturbing effect on the orbits of comets, 107—stability of the planetary system, 107, 109—Druidical knowledge of the planets, VIII. 186—Eudoxus' views of, III. 789. Planetary theory, I. 811—discovery of new planets, or asteroids, 859; of secondary planets, 860—their satellites. See Satellites.

—MACHINES, XVII. 753.

Planiceps, genus of insects, IX. 195.

Planimeter, XIV. 415.

Planing machine, Bramah's, V. 273—use of the planing machine, I. 879.

Planipennes, family of insects, IX. 177.

PLANISPHERE, XVII. 753; III. 791.

Plank, in joinery, V. 750—planks of a ship, XX. 187, 188.

Plano-convex and plano-concave lenses, XVI. 574.

Planorbis, genus of mollusks, XV. 374—fossil, XVII. 111.

PLANT, XVII. 753—what constitutes a plant, 91—distinctions from animals, III. 168; II. 748—organic constituents of, 374; V. 94; inorganic, II. 374, 384; V. 96—changes in the food of, during their growth, II. 382—elementary tissues, V. 65—integumentary system, 74—nutritive organs, 75—reproductive organs, 112—inflorescence, ib.—sexuality, 152—propagation, 167; XI. 693, 694, 702—temperature, V. 169—luminosity, 169; XIII. 458—electricity of, V. 170; VIII. 570—effects of electricity upon, 603; XXI. 635—classification of, V. 174, 176—arrangement and characters of the natural orders, 180—geographical distribution of, 219, 222; XVII. 624; in Britain, V. 726—specific centres from which plants have been spread, XVII. 625—total number known, ib.—families characteristic of different zones, 626—regions of, V. 227; XVII. 627—substances poisonous to, V. 175—natural and artificial classification of, both indicated by Cæsalpinus, VI. 56—colours of, VII. 152, 153—green colours of, XVI. 693—their defence against excessive cold, XI. 262—species yielding narcotico-acrid poisons, XIV. 439—effects of light on, XIII. 459—their tendency to increase in a geometrical progression, XVIII. 338—nature-printing of, 555—number found in Scotland, XIX. 796. See Botany and the Geographical articles generally.

Plantade on the barometer, IV. 455.

PLANTAGENET, XVII. 753.

Plantaginaceæ, nat. ord. of plants, V. 203.

Plantain tree, V. 211—fibre of, XXI. 783.

Plantain-eaters, birds, XVI. 784.

Plantations. See Forests, Woods, Planting, Timber.

Plantigrada, XIV. 153; XVII. 631—their mode of walking, III. 83.

PLANTING, XVII. 754—of fruit trees, XI. 695, 704—of timber trees, XXI. 268.

PLANUDES (Maximus), Greek monk, XVII. 776; III. 580.

Plasma, mineral, XV. 69; II. 232; VI. 67.

PLASSEY, in India, XVII. 776—battle of, XI. 484.

PLASTER, in pharmacy, XVII. 776—surgical, XX. 823.

—OF PARIS, XVII. 776—modelling with, XV. 293, 294; XIX. 808—casting with, IV. 323—its composition, XI. 172—paper adulterated with, XVII. 260—its use in stereotyping, XVIII. 550. See Gypsum.

Plasterer's work, V. 741—measurement of, 745.

Plastic clay, XV. 212; XVIII. 439.

Plat (Sir Hugh), on manures, II. 256—his method of making coal balls, X. 318 and n. 2.

PLA—PLA

PLATA (La), XVII. 776; II. 675, 705—climate of, 673—revolution in, 701—map of, VI. Plate.

—(RIO DE LA), XVII. 782, 603; V. 726—navigation of, II. 675.

PLATÆA, or Platææ, XVII. 782—battle of, IV. 200; XX. 501—festival in honour of Jupiter celebrated at, VIII. 631.

Platalea, genus of birds, XVI. 800.

Platanaceæ, nat. ord. of plants, V. 208.

Platax, genus of fishes, XII. 302—fossil, 344.

Plate, stamp on, XIV. 290.

Plateau (M.), on vision, XVI. 550.

—, Eastern, in Syria, XX. 903.

Plate-glass, X. 665.

Platemys, fossil Chilonian, XVII. 153.

Platen-zee, IV. 393.

Plates, in heraldry, XI. 325.

Platessa, genus of fishes, XII. 272.

PLATFORM, XVII. 783—of railway stations, XVIII. 766, 777 *et seq.*

PLATINA, or Platinum, XVII. 783; XV. 66, 113; VI. 499—oxides of, ib.—mines of, XV. 236—its use with the blow-pipe, IV. 791—specific gravity of, XII. 88—distribution of, XVII. 622—its fitness for a pyrometer, XVIII. 705—its use in colouring porcelain, 444—art of rendering malleable discovered by Wollaston, I. 972; XXI. 900—produce of, in Russia, XIX. 542, 543—its conducting power for electricity, XXI. 621—its effect on the electric current, 623—Children and Groves' experiments on wire of, 626, 627—decomposing power of spongy, 630.

Platinoids, family of metals, XVII. 622.

PLATING, XVII. 783—of copper, VII. 351—voltaic, XXI. 637.

Platinx, genus of fossil fishes, XII. 347.

PLATO, XVII. 783—speculations concerning the Trinity, I. 516, n. 2—his system of optimism, 126, 127—philosophy of, 316, 317; III. 538, 547, 555, 570—taught the possibility of antipodes, 277—on the soul and its transmigrations, 309; XIV. 628—his style, III. 571—his astronomy, 789—on beauty, IV. 537—his account of the island Atlantis, 177—on the dances of the ancients, VII. 645—his school of geometry, X. 498—his esoteric and exoteric doctrines, IX. 332—on optics, XVI. 521—his supposed opinions on *universals*, 284—his ethical works, XV. 539—philology advanced by, XVII. 518—his admiration of Socrates, XX. 379—does not give an exact portrait of him, 385, 402—his account of the last days of Socrates, 393—Dionysius of Syracuse committed to his care, 899.

PLATONISTS, XVIII. 1; XIV. 415.

PLATON, archbishop of Moscow, XVIII. 1.

Platonists, conic sections apparently discovered by, VII. 249—their opinion of brutes, V. 700—on vision, XIII. 449—speculations regarding the doctrine of the Trinity, XXI. 195.

—(New), II. 723.

Platte, river, XV. 281.

Platten-see, lake, XII. 10.

Plattes (Gabriel), II. 257.

Platting, distinguished from weaving, XXI. 780.

Plattnerite, mineral, XV. 111.

Platt's combing machine, XXI. 924.

PLATTSBURG, in New York, XVIII. 1.

Platyacanthus, fossil fishes, XVII. 117.

Platycephala, genus of insects, IX. 255.

Platycephalus, genus of fishes, XII. 281, 282.

Platyercus, genus of birds, XVI. 781.

Platycrinus, fossil echinoderms, XVII. 98.

Platidactyli, reptiles, XIX. 35.

Platygathus, genus of fossil fishes, XII. 337.

Platypeza, genus of insects, IX. 242.

Platypizinae, family of insects, IX. 242.

Platypterix, genus of insects, IX. 214.

Platypterus, Egyptian deity, XI. 386.

—, genus of fishes, XII. 307.

Platypus, Duck-billed, XIV. 193. See Ornithorynchus.

PLA—PLE

Platypus, genus of insects, IX. 142.

Platyrrhina, genus of fishes, XII. 327.

Platyrrhynæ, mammals, dentition of, XVI. 455.

Platyrrhynchus, genus of birds, XVI. 749.

Platysoma, family of insects, IX. 143, 253.

Platysomus, genus of fossil fishes, XII. 334; XVII. 125.

Platystoma, genus of fishes, XII. 261.

Platyura, genus of insects, IX. 228.

PLAUE, in Saxony, XVIII. 1.

PLAUTUS, XVIII. 1; XVII. 211—comedies of, VIII. 141, 142—sun-dials in his time, VII. 775—poetry of, XVIII. 104.

Player. See Actor.

PLAYFAIR (John), XVIII. 3—his dissertation on the progress of mathematical and physical science, I. 547—character and subjects of that dissertation, 802—remarks on his assertion that Galileo was the first who maintained the law of continuity, 258—his remarks on the characters of Hutton and Black, 928—on the mathematical and astronomical knowledge of the Hindus, II. 488; III. 786—on physical astronomy, IV. 96—on barometrical measurements, 465—on the point where a river ends and a firth begins, IX. 600—on the origin of Porisms, X. 505—on magnetic curves, XIV. 46—his illustrations of Hutton's theories, XII. 61—his character and merits, I. 802, n.—on Sir H. Davy's safety lamp, 971—on Prof. Robison's lectures, XIX. 238.

—(Dr. Lyon), his report on coal for the steam navy, X. 319—on atomic volumes, VI. 449—instances of ignorance of minerals related by, XXI. 321.

PLAYHOUSE, XVIII. 8. See Theatre.

Playte, kind of ship, XX. 123.

Plea, genus of insects, IX. 163.

Pleading, English, VIII. 789.

Pleasure, Aristotle on, III. 561—relative value of different kinds of, VIII. 25—Epicurean notions of, IX. 273—how far the pursuit of, consistent with morality, XV. 573. See Happiness.

PLEBEIAN, VIII. 8—Roman plebeians, XIX. 296.

Plecoglossus, genus of fishes, XII. 246.

Plectognathi, or Plectognaths, order of fishes, XII. 312, 313.

Plectrolepis, genus of fossil fishes, XII. 334; XVII. 125.

Plectrophanes, genus of birds, XVI. 760.

Plectropoma, genus of fishes, XII. 223, 276.

PLECTRUM, XVIII. 9.

PLEDGE, XVIII. 9.

PLEIADES, in mythology, XVIII. 9.

—, constellation, XVIII. 9; I. 842, n.

Pleione, genus of annelides, IX. 297.

Pleiocene, in geology, XVII. 637. See Pliocene.

Pleionemus, genus of fossil fishes, XII. 345.

Pleistocene period in geology, XV. 215; XVII. 637—British rocks of the, XV. 215; foreign, 217—geographical distribution of the mammals of, XVII. 173.

Plenitude of stars, I. 844.

Pleochroism, in minerals, XV. 58.

PLEONASM, in rhetoric, XVIII. 9.

Pleonaste, mineral, XV. 87.

PLESCHEN, town in Prussia, XVIII. 9.

Plesiops, genus of fishes, XII. 288.

Plesiosaurus, XVII. 146, 147—bones of, III. 89.

Pletho (Georgius). See Gemistus.

PLETHORA, XVIII. 9—in the domestic animals, XXI. 574.

Pleura, II. 838.

Pleuracanthus, genus of fossil fishes, XII. 340; XVII. 117.

Pleurenchyma, V. 69.

Pleurisy, in animals, XXI. 573.

Pleuronectes, genus of fishes, XII. 225—fossil, XVII. 345.

Pleuronectidæ, family of fishes, XII. 271, 272—fossil, XVII. 128.

Pleurophorus, fossil mollusks, XVII. 105, 107.

PLE—PLU

Pleurophyllidia, genus of mollusks, XV. 371.

Pleurosternon, fossil tortoises, XVII. 153.

Pleurosthotonos, disease, XVII. 700.

Pleurotomaria, fossil mollusks, XVII. 111.

Plexus, in anatomy, II. 812.

Pliableness, combination of strength with, in beams, XX. 767.

PLICA POLONICA, XVIII. 9.

Plicatula, genus of mollusks, XV. 348—fossil, XVII. 106.

Plicipennes, family of insects, IX. 180.

Plinian, mineral, XV. 115.

PLINIUS SECUNDUS (Caius), or Pliny the Elder, XVIII. 9—on agriculture, II. 250—on alumen, 636—on sal ammoniac, 720—on ants, III. 261—on dew, VII. 765—on bees, IV. 587—on the Druids, VIII. 183 *et seq.*—on calico-printing, 314—on the preservation of timber, 212—on geography, X. 468—on the remora, XII. 270—on irrigation, 622—his natural history, III. 549, n. 11; XIV. 123; XVII. 214—Hardouin's edition of it, XI. 226; H. Barbarus's emendations of, XVII. 522—on ornithology, XVI. 725—on painting, XVII. 51 *et seq.*—on the papyrus, 247—on the pearl, 356—his account of a meteorolite, XIV. 629—on ancient sculpture, XIX. 843 *et seq.*—on the silk-worm, XX. 286—on soap, 365—on the boundaries of Syria, 901—on the tides, XXI. 250—on ancient vines, 882.

PLINIUS CAECILIUS SECUNDUS (C.), or Pliny the Younger, XVIII. 12—his letter to Trajan about the Christians, VI. 640; I. 493, n.—on hunting, XII. 32—Melmoth's translation of his letters, XIV. 485—his letter to Quintilian, XVIII. 737—his notices of Suetonius, XX. 787, 788—on Tacitus, XXI. 2, 3.

PLINTH, XVIII. 13; III. 512.

Plinthite, mineral, XV. 83.

Pliocene period in geology, XV. 214—flora of, V. 237—insects of, XVII. 103—fossils, 637.

Pliolophus, fossil mammals, XVII. 162, 163.

Pliopithecus, fossil apes, XVII. 167.

Pliosaurus, fossil reptiles, XVII. 148.

Ploas, genus of insects, IX. 234.

Ploceus, genus of birds, XVI. 760.

PLOCK, in Poland, XVIII. 13.

PLOERMEL, in France, XVIII. 13.

Ploiaria, genus of insects, IX. 163.

Ploiitribus, genus of insects, IX. 142.

Plombgomme, mineral, XV. 106.

PLÖN, town in Denmark, XVIII. 13.

Plot (Dr Robert), XVIII. 13.

PLOTINUS, philosopher, XVIII. 14, 366; XII. 194; XVII. 232.

Plotosus, genus of fishes, XII. 220, 260, 263.

Plotus, genus of birds, XVI. 814.

Plough, XVIII. 15; II. 270, 271—substitution of grubbers for, 290—subsoil-plough, 271.

Ploughing, II. 286.

Plovers, birds, XVI. 797—shooting of, XX. 216.

Plowden (Edmund), XVIII. 15.

Plowman (Piers), vision of, VIII. 792.

PLUCHE (N. Antoine), French writer, XVIII. 15.

Plücker (Prof.), on the influence of electromagnetism on the axis of crystals, I. 981; XVI. 675.

Plum, V. 191—culture and varieties of, XI. 711, 712.

Plumbaginaceæ, nat. ord. of plants, V. 203.

Plumbago, XV. 123—pencils of, XVII. 375—in Ceylon, VI. 393—Cumberland, VII. 577; XV. 243, n. See Graphite.

Plumbers' work, in building, V. 755—their extortionate charges, 756. See Lead.

Plumbic acid, VI. 497.

PLUMB-LINE, or Plummet, XVIII. 15; XXI. 347.

Plumbocalcite, mineral, XV. 92.

Plumbostib, mineral, XV. 119.

Plume-nutmeg, order of plants, V. 204.

PLU—POD

- Plummer (Mr), his flax-machines, XIII. 494, 495.
 Plumose, mineral, XV. 119.
 Plumule, in botany, V. 141.
 Plunger pole pump, XII. 176.
 PLUNKET (Wm. Conyngham), Lord Chancellor of Ireland, XVIII. 15—his bills for Catholic emancipation, V. 631—his advocacy of the Catholic claims, 638, 639.
 PLURAL, in grammar, XVIII. 16; X. 747.
 Plusquam-perfect tense, X. 766, 767.
 PLUTARCH, XVIII. 16—the notion of centrifugal force implied in a statement of his, I. 568—on the Amazons, II. 651—his character of the Athenians, IV. 211—on cold, VII. 99—on virtue, XV. 558—his notices of ancient sculpture, XIX. 855 *et seq.*—on the alleged poverty of Socrates, XX. 376, n. 3—Langhorne's translations of his *Lives*, XIII. 183, 184.
 PLUTO, XVIII. 17; XI. 179.
 PLUTUS, god of riches, XVIII. 17.
 Plectolophus, genus of birds, XVI. 783.
 Plymlimmon, XV. 518.
 PLYMOUTH, XVIII. 17—breakwater at, V. 306—fortification of, 516, 517—diving-bell used at, VIII. 66—dockyard of, 84—victual establishments, *ib.*—hospital, *ib.*—harbour, 721—harbour of refuge at, XI. 222—tide at, XXI. 249.
 —a town in Massachusetts, XVIII. 21; XIV. 341; XX. 432.
 —group of rocks, XV. 199.
 PLYMPTON, two towns in Devon, XVIII. 21.
 PLYNTERIA, XVIII. 21.
 Pneumatic process, in sugar making, XX. 795.
 PNEUMATICS, XVIII. 22—invention of the air-pump, I. 596; X. 79—experiments on the passage of air through pipes, I. 726—method of determining the relative density of any gas, 727—on the escape of air and vapour through an aperture, *ib.*—experiments on the density of the air at different heights, 729—explanation of Bouguer's rule relative to the barometrical measurement of mountains, 730—experiments of De Luc, 730—vacuifying apparatus in the feet of certain animals, III. 101; IX. 223—Dr Beddoes's Pneumatic Institution, IV. 566—Pneumatic Power Transmitter, XIV. 336—Hero of Alexandria's work on, XX. 573. See Air-pump, Atmosphere, Barometer, Hydrostatics.
 Pneumodermon, genus of mollusks, XV. 362.
 Pneumogastric nerve, III. 57.
 Pneumonia, in the domestic animals, XXI. 573—in Saxony, XVIII. 666.
 Pneumora, genus of insects, IX. 158.
 Pnyx, in ancient Athens, IV. 169.
 Po, river, XVIII. 88; XII. 637; XIII. 644; XVII. 242, 647; XIX. 633—its inundations, XII. 70—mouths, XVII. 241—tributaries, 242—deposition at the mouths of, XIX. 207—velocity of, 199—bed, 206.
 Pochards, birds, XVI. 817.
 POCCHETTI, XVIII. 88. See Barbatelli.
 Pocklington, town in Yorkshire, XVIII. 88.
 Pocock (Edward), English divine, XVIII. 88.
 POCOKE (Richard), bishop, XVIII. 89—his description of an aqueduct at Jerusalem, III. 333.
 Podabrus, genus of fishes, XII. 282.
 Podactinaria, zoophytes, XXI. 1005.
 Podalirius, XX. 809.
 Podargus, genus of birds, XVI. 759.
 PODOGORTZA, in Turkey, XVIII. 89.
 Podiceps, genus of birds, XVI. 809.
 Podisma, genus of insects, IX. 160.
 Podium, genus of insects, IX. 195.
 —in architecture, III. 512.
 Podley, fish, XII. 269.
 Podoa, genus of birds, XVI. 809.
 Podocys, genus of fossil fishes, XII. 343.

POD—POI

- Pododus, genus of fossil fishes, XII. 335; XVII. 125.
 PODOLIA, or Podolsk, in Russia, XVIII. 89.
 Podontia, genus of insects, IX. 149.
 Podophthalma, crustacea, VII. 538, 540.
 Podostemonaceæ, nat. ord. of plants, V. 207.
 Podura, genus of insects, IX. 261.
 Podurellæ, family of insects, IX. 261.
 Pœcilia, genus of fishes, XII. 252.
 Pœcilophis, genus of fishes, XII. 232.
 Pœcillopleuron, fossil reptiles, XVII. 152.
 POE (Edgar Allan), poet, XVIII. 89.
 POELENBURG (Cornelius), painter, XVIII. 90.
 Poepping (Dr) on Peru, XVII. 470, 472.
 Poerner's processes for dyeing scarlet, VIII. 289.
 Pœstum. See Pæstum.
 Poetics, Aristotle's, III. 559.
 POETRY, XVIII. 91; XV. 23, 31—Chinese, VI. 578—Persian, XVII. 429—Sir Walter Scott's, XIX. 823—had the Egyptians poetry? XI. 428—character in, VI. 420—definition of, by D'Alembert, I. 4—by Bacon, 33—language of, IV. 548—comparisons in, VII. 218—no French language of, VIII. 155—suggests musical ideas, XV. 738—relations between it and persuasive eloquence, XIX. 137.
 Poey (M.), his work on the lepidoptera of Cuba, IX. 18.
 Poggio, XVIII. 127. See Bracciolini.
 Pogonias, genus of birds, XVI. 779.
 —genus of fishes, XII. 284, 285.
 Pogonocherus, genus of insects, IX. 146.
 Poitiers. See Poitiers.
 Poignard on magic squares, XIII. 810.
 POILLY (François), engraver, XVIII. 127.
 Poinot (M.) on rotation, I. 825—his theory of statical couples, *ib.*—on the precession of the equinoxes, XVIII. 459.
 POINT, XVIII. 127—motion of, in mechanics, XIV. 384—motion of two points, 387—dry point, in engraving, VIII. 799, 803—action of points in electricity, 553. See Punctuation, Astronomy, Geometry.
 Point-blank, in gunnery, XI. 104.
 POINT-A-PITRE, XVIII. 127; XI. 72.
 POINT-DE-GALLE, in Ceylon, XVIII. 127; VI. 390, 393; XXI. 27.
 Pointed architecture, III. 445, 449, 456, 479, 489, 516, 517—first period of, 480—second period, 481—third period, 482—origin of, XX. 710.
 Pointer-dogs, XX. 218.
 Pointis, a buccaneer, V. 713.
 POIRINO, Italian town, XVIII. 127.
 POISON, XVIII. 127—metallic poisons, XIV. 432—vegetable, 436—animal, 439—earthy and alkaline, 434—acid, 435—gaseous, *ib.*—simple substances with poisonous qualities, *ib.*—in reference to medical jurisprudence, 432—distinguished from aliments and medicines, III. 179—the same kinds do not act alike on different animals, *ib.*—extensive poisonings with aqua tofana, 329, 330—of spiders, 373—of the bee, IV. 573—of serpents, XI. 456; XIX. 44, 45, 46, 48—poisonous animals, XIV. 439—fishes, *ib.*; XII. 236, 312, 331 *n.*—imaginary poisonings, XIV. 440—substances poisonous to plants, V. 173—ordeals by poison, XVI. 701—Nicander's poems on poisons and their antidotes, 242—poisoning of rats, XXI. 548.
 Poison-gland of serpents, III. 113; XIX. 44—poison-fangs of, XVI. 431, 432; XIX. 44.
 POISSON (Simon Denis), XVIII. 136—on the stability of the planetary system, I. 813, 824—on rotation, 824—invariability of the mean solar ray, *ib.*—on the conduction of heat, 951—his writings, 825—on the propagation of sound, II. 104—on electricity, VIII. 531; I. 989—his theory of capillary attraction, XII. 100, 101; and of waves, 74—on gunnery, XI. 129—on magnetism, XIV.

POI—POL

- 91, 92—on optics, XVI. 546—on the possibility of a projectile from the moon reaching the earth, XIV. 635—on probability, XVIII. 590, 591.
 Poitevin (M.), his photo-lithographic process, XVII. 554.
 POITIERS, in France, XVIII. 136—battle of, VI. 614; VIII. 683; X. 18—population, 277.
 POITOU, in France, XVIII. 136; X. 277.
 Poke-weed, order of plants, V. 136.
 POKHURN, town in India, XVIII. 136.
 POKUR, in India, XVIII. 136.
 POL DE LEON (St), in France, XVIII. 136.
 Pola, amphitheatre at, II. 731.
 POLAND, XVIII. 137—partition of, IV. 391; XIX. 488—Polish bibles, IV. 702—corn trade of, VII. 402; with England, VIII. 732—Napoleon's conduct towards, X. 144, 148, 155—debate on in the French chambers, 205—language of, IX. 392; XIII. 214—Jews in, XII. 782, 783—libraries in, XIII. 425—coins of, XV. 442, 444; XVI. 389—monarchy of, XV. 414—Prussia's share in the partition of, XVIII. 655—wars with Russia, XIX. 475 *et seq.*: insurrection of 1830, 498—natives of in Russia, 663—effect of the Revolution of 1830 in Paris on, XVIII. 156—Campbell the poet's interest in, VI. 127—silk produced in, XX. 278—wars with Sweden, 848, 851—deposition of Augustus and elevation of Stanislas to the throne, 853—reinstatement of Augustus, 854—weights and measures, XXI. 813.
 —kingdom of European Russia, XVIII. 160.
 Polar Bear, XIV. 153, 154.
 —Circles, X. 481.
 —Lights. See Aurora Borealis.
 —REGIONS, ARCTIC, XVIII. 161—recent voyages to, X. 473, 474—furred animals of, 345—insects of, IX. 70—abundance of birds in, XVII. 633—rarity of thunder storms in, 615—plants of, V. 226—Parry's voyages to, XVII. 306 *et seq.*; Franklin's, X. 296; Ross's, XIX. 424; Lyon's, XIII. 750.
 —ANTARCTIC, XVIII. 181.
 —Seas, phenomena of, XVII. 583—surface water sometimes nearly fresh, 574—Russian islands in, XIX. 552.
 Polaroscope, I. 909.
 Polarity of magnets, XIV. 20.
 POLARIZATION OF LIGHT, XVIII. 182; XIII. 453; XV. 57; XVI. 532, 537 *et seq.*—discovery of by Malus, I. 754, 901, 902—history of the discovery, *ib.*—Huygen's discovery of polarization by calc spar, 902—by reflection, *ib.*—by common refraction, *ib.*—Sir D. Brewster's researches on, 912—law of, by reflection, *ib.*—imperfect polarization, *ib.*—polarizing structure in heated glass, *ib.*—phenomena as shewn by uniaxial crystals, 913—metallic polarization, 914—Dr Faraday's experiment, 981—rotation of plane of polarization of a ray of light, *ib.*—circular polarization, 905—colours of crystallized bodies in polarized light, 908—laws of, VI. 652, 659—idea of may be traced to Newton's Optics, I. 754, and *n.*—of sky light, XIV. 682—polarization of heat, I. 956; XI. 267—circular, XVI. 683; I. 956—polarizing microscopes, XIV. 788.
 Polcura, or alum-earth, II. 638.
 Polders, in Belgium, IV. 611; in Holland, XI. 582.
 POLE (Reginald), archbishop of Canterbury, XVIII. 182; VIII. 705, 709.
 —(Wellesley), V. 624—mint remodelled by, VII. 80.
 —XVIII. 182—poles of the earth, IV. 1; X. 480—Daines Barrington on the possibility of reaching the North Pole, IV. 472—terrestrial magnetic poles, I. 990, 991; XIV. 50, 3, 11, 20; XVII. 617—poles of maximum cold, XIV. 11—poles of the ecliptic, IV. 12. See Polar Regions.

POL—POL

- Pole, positive and negative, in voltaic electricity, XXI. 629.
 —or Perch, XVIII. 182; XVII. 406.
 Pole-cat, XIV. 157—its fur, X. 348.
 POLEMARCHUS, XVIII. 182; III. 517.
 Polematas, VII. 655.
 Polemoniaceæ, nat. ord. of plants, V. 200.
 Polemon, kings of Pontus, XVIII. 292.
 Poleni (Marquis), on hydrodynamics, XII. 71, 117.
 Polenta, XII. 662.
 Pole-star, VII. 787.
 POLETÆ, XVIII. 182.
 POLEVOY (N. Alexievich), Russian author, XVIII. 182.
 Polhil on the Divine attributes, XXI. 192.
 POLI (G. Xaverio), XVIII. 183.
 Polianite, mineral, XV. 111.
 POLICASTRO, town of Naples, XVIII. 183; XX. 241.
 POLICE, XVIII. 183—medical, XIV. 440; of apothecaries' shops, 441—of London, XIII. 678—Dublin, VIII. 220—Edinburgh, 404—Glasgow, X. 653—Petersburgh, XVII. 489—of Ireland, XII. 502, 524—Indian, XI. 521—Belgian, IV. 614—Police Gazette, X. 444.
 POLICY OF INSURANCE, XVIII. 209—stamps on, XII. 409—its limits as to residence, 410—interest of one person effecting a policy on the life of another, *ib.*—surrender of a policy, *ib.* See Insurance.
 POLIDORO, painter, XVIII. 209; XVII. 69. See Caravaggio (Polidoro da).
 Polignac, X. 192 *et seq.*—his ministry, 196—trial and banishment of, 203.
 POLIGNANO, town of Naples, XVIII. 209.
 POLIGNY, town of France, XVIII. 209.
 POLILLO, island, XVIII. 209.
 Polishing of specula for telescopes, XXI. 135.
 Polistes, genus of insects, IX. 197.
 POLISTINA, town of Naples, XVIII. 209.
 POLITIANO (Angelo), Italian author, XVIII. 209.
 POLITICAL ARITHMETIC, XVIII. 209.
 —ECONOMY, XVIII. 210; XI. 545—inadequacy of the term to express the nature of the science, I. 310—Aristotle on, III. 569—Beccaria on, IV. 558—Dr Chalmers' work on, VI. 405—Ricardo on, XIX. 154—value of statistics to, XX. 549. See Credit, Colonies, Commerce, Corn-Laws, Cottage-system, Currency, Economists, Emigration, Money, Poor-Laws, Population, Taxation, &c.
 —education, XV. 811.
 —ethology, XIII. 264.
 —Geography, X. 459.
 —liberty, XIII. 260.
 —medicine, XIV. 463.
 —Science, little advance made in, prior to the 17th century, I. 20.
 Politics, Aristotle on, III. 566—wherein different from political economy, XVIII. 223—Academies of, II. 71.
 Poliziano (Angelo), VI. 746; XVII. 522.
 POLL, XVIII. 261—for member of Parliament, XVII. 296.
 POLLA, La, town of Naples, XVIII. 261.
 POLLAJUOLO (Antonio), XVIII. 261.
 Pollan, fish, XII. 243; XVI. 123.
 Polled-cattle, II. 341.
 POLLEN, XVIII. 261; V. 118, 126, 128, 154, 155—active molecules in, III. 205—function of, XVII. 683—collected by bees, IV. 572.
 POLLENZA, in Majorca, XVIII. 261.
 Poll-evil, XXI. 558.
 Pollicipes, fossil barnacles, XVII. 101.
 POLLIO (Caius Asinius), XVIII. 261—Virgil's *Eclogues* begun at the suggestion of, XXI. 594.
 —(Vedius), his treatment of his slaves, XX. 319.
 Pollock, fish, XII. 243, 269.
 —(General), on an electrical phenomenon in India, VIII. 583.
 —(ROBERT), poet, XVIII. 261.

POL—POL

POLLOCKSHAW, XVIII. 261—Monteith's weaving factory at, VII. 450—printing of calicoes first introduced at, X. 648.
 POLLUX, XVIII. 262; VIII. 36.
 — (JULIUS), ancient Greek writer, XVIII. 262.
 — mineral, XV. 72.
 POLNA, town in Bohemia, XVIII. 262.
 POLO (Marco), XVIII. 262—on China, VI. 561, 583, 595—his travels in Asia, III. 753; X. 469, 470; XVIII. 163—first made Java and Japan known to Europeans, XII. 697, 708—Marsden's translation of his travels, XIV. 315.
 Polochrum, genus of insects, IX. 195.
 POLOTZK, Russian town, XVIII. 263.
 POLTAVA, in European Russia, XVIII. 263; XIX. 521.
 PÖLTEN (St), in Lower Austria, XVIII. 263.
 Polyacanthus, genus of fishes, XII. 290.
 POLYÆNUS, XVIII. 263.
 Polyangular kaleidoscope, XIII. 39.
 Polyanthus, culture of, XI. 753.
 — narcissus, V. 112; XI. 752.
 Polyargite, mineral, XV. 79.
 Polybasite, mineral, XV. 121.
 POLYBIUS, Greek historian, XVIII. 264—on government, VIII. 760, 765—on the balance of power, IV. 389, n.—on Hannibal's passage of the Alps, VI. 293, n.—Folard's Commentaries on, IX. 749—on geography, X. 467—Gronovius' edition of, XI. 67—recovery of portions of his History, XVII. 213—discrepancies between him and Livy, XIII. 526.
 Polybus, Greek anatomist, II. 749.
 POLYCARP, XVIII. 264; IX. 491.
 Polycentral kaleidoscope, XIII. 39.
 Polycera, genus of mollusks, XV. 371.
 Polychroite, VIII. 297.
 Polychroism, artificial, in optics, XVI. 667.
 Polychromy, XIX. 868.
 Polychrus, genus of serpents, XIX. 34.
 POLYCLETUS, Greek statuary and architect, XVIII. 265; XIX. 854.
 Polyclinum, genus of mollusks, XV. 331, 332.
 POLYCRATES, Greek tyrant, XVIII. 266.
 Polycystineæ, XVII. 94.
 Polydesmus, genus of myriapods, XV. 748.
 Polydonta, genus of mollusks, XV. 375.
 POLYDORE, Virgil, XVIII. 266.
 Polyergus, genus of insects, IX. 194.
 Polygalaceæ, nat. ord. of plants, V. 183.
 Polygamia, in botany, V. 177.
 Polygamous birds, III. 181.
 POLYGAMY, XVIII. 266—in Arabia, III. 354—Arracan, 675—prevalent in Asia, 750—in Ashantee, 727—Beloochistan, IV. 642—China, VI. 595—Polynesia, XVIII. 271—Siam, XX. 233—among the ancient Germans, X. 573—among the Mormons, XV. 591—sanctioned by the Mohammedan religion, 304—a violation of the primary law of marriage, 568—becoming rare among the Turks, XXI. 378.
 Polyglottic process, in photography, XVII. 545.
 POLYGLOTT, or POLYGLOTT, XVIII. 266; IV. 697.
 POLYGNOTUS, ancient Greek painter, XVIII. 266; XVII. 53, 56.
 POLYGON, XVIII. 267; X. 507, 508, 513, 524, 528—to find its area, XIV. 504, 505—polygons of loads, 381—of resistances, ib.—flexible, XX. 542.
 Polygonaceæ, nat. ord. of plants, V. 204.
 Polyhalite, mineral, XV. 96.
 POLYHEDRON, XVIII. 267—mensuration of, XIV. 508.
 POLYHISTOR, XVIII. 267.
 POLYHYMNIA, one of the muses, XVIII. 267; XV. 699.
 Polykrase, mineral, XV. 110.
 Polylite, mineral, XV. 81.
 Polymerism, VI. 450, 503.
 Polymignite, mineral, XV. 110.
 Polynemidae, or Polynemids, family of fishes, XII. 278.

POL—POM

Polynemus, genus of fishes, XII. 278.
 POLYNESIA, XVIII. 267; IV. 251—diving in, VIII. 57—height of mountains, XVII. 645—volcanoes, 589—botanical region of, V. 228; XVII. 628—reptiles, XIX. 31, 35—absence of serpents from, 50—missions in, XV. 271, 273—insincerity of many of the Christian converts, 274. See Tahiti, &c.
 Polynesians, in ethnology, IX. 347.
 Polynia, open sea in the Polar Regions, XVIII. 176.
 Polynce, genus of annelides, XI. 300.
 Polyodon, genus of fishes, XII. 317.
 Polyommatus, genus of insects, IX. 208.
 Polypary, XVII. 95.
 Polypes, zoophytes, XXI. 974, 1001—radiated, 1002—molluscan, 1001.
 POLYPHEMUS, a Cyclops, XVIII. 283.
 Polyphractus, genus of fossil fishes, XII. 339.
 Polypidom, XXI. 1001.
 POLYPLECTRON, musical instrument, XVII. 283.
 — genus of birds, XVI. 786.
 Polypoda, echinoderms, XXI. 986.
 Polypodiaceæ, sub-order of ferns, V. 216.
 Polypody, tribe of ferns, V. 216.
 Polyprion, genus of fishes, XII. 276.
 Polyptrichthys, genus of fishes, XII. 305.
 Polypteridæ, family of fishes, XII. 317.
 Polypterus, genus of fishes, XII. 316, 317.
 Polyptychodon, fossil reptiles, XVII. 152.
 Polypus, III. 175, 176—fossil polypi, XVII. 95.
 — a disease of cattle, XXI. 571.
 Polysphærite, mineral, XV. 106.
 Polystoma, genus of entozoa, XXI. 980.
 Polytechnic school, in France, X. 272, 177.
 — Institution, falling off the staircase in, XX. 733.
 POLYTHEISM, XVIII. 283—origin of, IV. 216. See Mythology, Pagans.
 Polytriglyph, III. 512.
 Polyttype, XVIII. 552.
 Polyuranodon, genus of fishes, XII. 231.
 Polyxenus, genus of myriapods, XV. 748.
 Polyzoa, zoophytes, XXI. 1002.
 Pomacanthus, genus of fishes, XII. 302—fossil, 344.
 Pomacentrus, genus of fishes, XII. 265.
 Pomanotis, genus of fishes, XII. 277.
 Pomare, kings of Tahiti, XVIII. 281.
 — queen of Tahiti, XVIII. 281—proceedings of the French regarding, X. 217.
 Pomatomus, genus of fishes, XII. 275.
 POMBA (Villa da), town in Brazil, XVIII. 283.
 POMBAL (Dom S. José de Carvalho, marquis de), XVIII. 283, 387—his policy in reference to Brazil, V. 284.
 — Portuguese town, XVIII. 283.
 Pome, in botany, V. 138.
 Pomeæ, sub-order of plants, V. 191.
 Pomegranate, V. 192.
 POMERANIA, in Prussia, XVIII. 284—farming in, 666—reduced by Gustavus Adolphus, XX. 849.
 POMEROY, town in Ohio, XVIII. 284.
 POMFRET (John), poet, XVIII. 285.
 — town in Yorkshire, XVIII. 291.
 Pommade, XVII. 409.
 Pommel, in tanning, XIII. 309.
 POMERIUM, XVIII. 285.
 POMONA, one of the Orkney Islands, XVIII. 285; XVI. 718.
 Pomotis, genus of fishes, XII. 277.
 Pompadour (Madame de), X. 37.
 POMPEII, XVIII. 285; III. 445, 457; XI. 344—streets and houses in, III. 471, 472—domestic utensils found in, 473—architectural remains of, 516—theatre of, 470—pictures found in, XVII. 81—frescoes and bronzes, XV. 781, 782.
 Pompeium, in ancient Athens, IV. 161.
 POMPEIUS (Trogus), XVIII. 289; XXI. 354.
 POMPEY (Cneius), XVIII. 288; VIII. 471; XIX. 322 *et seq.*—Jerusalem taken by,

POM—POO

XII. 733, 770—his expedition against Mithridates, XV. 285; XVIII. 292.
 POMPEY (SEXTUS), XVIII. 289; XIX. 329.
 Pompey's Pillar, II. 472; VIII. 497—affords evidence of the absence of earthquakes in Egypt in modern times, XVII. 617.
 Pompilus, genus of insects, IX. 195.
 Pomponatius on the power of the will in curing diseases, XX. 416.
 POMPONIUS (Mela), XVIII. 289; XIV. 474.
 POMPTINE or PONTINE MARSHES, XVIII. 289; VI. 123; XII. 636; XVII. 242.
 PONANY, Indian seaport, XVIII. 290.
 PONCE (Pedro), XVIII. 290; VII. 688.
 Poncelet (M.), on hydrodynamics, XII. 75; I. 889, 890—his experiments in hydraulics, XII. 149—his wheel, 75, 166.
 POND (John), astronomer, XVIII. 290—his improvements in practical astronomy, I. 849—on the parallax of the fixed stars, IV. 81—his controversy with Dr. Brinkley on that subject, I. 864—peculiarity in his sense of hearing, XV. 703—on the pendulum, XXI. 800.
 Pond-snails, XV. 374.
 PONDICHERY, XVIII. 290; XI. 482, 485.
 Pondweed order of plants, V. 214.
 Ponera, genus of insects, IX. 194.
 Poniatowski (Count), VI. 334, 336; XVIII. 145.
 — or Poniatowski (PRINCE JOSEPH), XVIII. 290, 150, 151; X. 159 *et seq.*, 165; XXI. 855.
 Pons, astronomer, I. 858—comet discovered by, 856.
 — (St), town in France, XVIII. 291.
 — town in France, XVIII. 291.
 PONT-A-MOUSSON, town in France, XVIII. 291.
 PONT-AUDEMER, town in France, XVIII. 291.
 Pont Cysylte aqueduct, III. 338.
 Pont du Louvre, XII. 580; d'Austerlitz, ib.—d'Archevêche, 581—St Denis, ib.
 PONT ST ESPRIT, town in France, XVIII. 291.
 Ponta Delgada, IV. 336.
 PONTARLIER, in France, XVIII. 291; VIII. 114.
 PONTECORVO, in the Papal States, XVIII. 291; XX. 237.
 Pontederiaceæ, nat. ord. of plants, V. 213.
 PONTEFRACT, town in Yorkshire, XVIII. 291; XXI. 959—Castle, ib.
 PONTE LAGOSCURO, in the Papal States, XVIII. 292.
 PONTEVEDRA, XVIII. 292; X. 378.
 PONTEVICO, XVIII. 292.
 PONTIANAK, town and state in Borneo, XVIII. 292; V. 47.
 PONTIFEX or Pontiff, XVIII. 292; XIX. 296.
 Pontine marshes. See Pomptine marshes.
 Pontius, the Samnite, XIX. 304.
 PONTIVY, town in France, XVIII. 292.
 PONTLOISE, town in France, XVIII. 292.
 Ponton (Mungo), his photographic process, XVII. 545—photometer proposed by, 555.
 PONTOON, XVIII. 292—train of artillery, III. 705.
 PONTOPPIDAN (Eric), XVIII. 292; XIX. 692—his account of a merman, XIV. 217.
 PONTREMOLI, town in Parma, XVIII. 292.
 PONTUS, XVIII. 292—monarchy of, XV. 414—coins of, XVI. 374—Caesar's campaigns in, XIX. 326. See Mithridates.
 PONTYPOOL, XVIII. 293.
 Pony, XI. 656—Highland, II. 338.
 PONZ (Antonio), XVIII. 293.
 PONZA or Pontia, island, XVIII. 293.
 Pool (Gerrit Tomaz), exploratory voyage of, IV. 252.
 POOLE, in Dorsetshire, XVIII. 293; VIII. 111.
 — (MATTHEW), XVIII. 294.
 — (Mrs), on Egypt, VIII. 421—her work on Egypt, 449.

POO—POP

Pooly (H.), his locomotive weighing machine, XXI. 798.
 Poon-wood of India, XXI. 277.
 POONA, town in India, XVIII. 294; XI. 503, 504.
 Poonahite, mineral, XV. 75.
 Poonseed oil, XVI. 496.
 POORBUNDER, town in India, XVIII. 295.
 Poor, state of, in Lancashire, XIV. 257—Manchester, 257—Edinburgh, VIII. 405—France, X. 268—Holland, XI. 589—Spain, XX. 493—education of, in England, VIII. 745—their right to support, XVIII. 357. See Mendicacy, Pauperism, Poor Laws.
 POOR-LAWS, XVIII. 295—their origin in England, VII. 376, 377, n.—in Scotland, XIX. 810—cottage system, VII. 427, 433.
 "Poor men of Lyon," followers of Valdo so called, XXI. 510.
 Poor-rates, English, VIII. 748; XVIII. 307, and n. 2; 309, n. 1—pernicious effects of paying wages out of, VIII. 749.
 Pooshkin, Russian author, XIX. 547.
 POPAYAN, town of New Granada, XVIII. 317.
 POPE of Rome, XVIII. 317—Aquinas on the power of, I. 436—ceremony of kissing the feet of, II. 150—books prohibited by, IV. 712—his council, VI. 235—election of, ib.; VII. 228; XVII. 244—power of, during the middle ages, 531—effect of the crusades on the power of, ib.—tiara of, XI. 335—monarchy of the popes, XV. 414—consistory, VII. 298—his claims to be regarded as the successor of St Peter, XVII. 482—list of Popes, XVIII. 319—rise of the papal power in Rome, XIX. 365—Rome under the Popes, 367—Pope Innocent VIII. grants a bull for the extinction of the Valdenses, XXI. 509. See Popery.
 — (Alexander), XVIII. 320—mistake of, concerning the doctrine of necessity, I. 128, n. 1—his censure of Newton and Clarke's reasonings on the existence of a Deity, 140, n. 2; 146—Spinozism and Pantheism, with which he charged Clarke, brought against himself, 147—his admiration of Berkeley, 163—Memoirs of Martinus Scriblerus, III. 398; XX. 873—his intimacy with Atterbury, IV. 190; and with Swift, XX. 873—his treatment of Broome, V. 679—his injustice to Burman, 789—his satire on Dr S. Clarke, VI. 758—his opinion of Dryden, VIII. 203—poetry of, XVIII. 123—his quarrel with Lord Harvey, XI. 861—intimacy with Lady Mary Montagu, XV. 505—his epigrams, IX. 275—epitaphs, 283—his criticisms on Philip's poems, XVII. 514—Roscoe's edition and life of, XIX. 419—Warburton's vindication of his Essay on Man, XXI. 728, 729—his friendship with Warburton, ib.—Warton's essay on his writings and genius, 733; and edition of his works, 734—his definition of wit, 894.
 — (Mr) on the construction of bridges, XII. 582.
 — (Sir Thomas), XVIII. 322—founder of Trinity College, Oxford, XXI. 459—Warton's Life of, 735.
 POPERINGHE, town in Belgium, XVIII. 336.
 POPERY, XVIII. 336—favoured by Charles H., V. 430, 433—and by James II., 435—baptism, IV. 424, 425—canon law, VI. 188—canonization, 192. See Celibate, Penance, Purgatory, Reformation, Relics, Roman Catholic Church, &c.
 Pop-gun plot, V. 555.
 POPHAM (Sir John), XVIII. 337.
 — (Sir Home), his capture of Buenos Ayres, V. 602; XVII. 780—his code of naval signals, XVI. 109.
 Popish plot, V. 427; XII. 488.
 POPLAR, parish in Middlesex, XVIII. 337.
 Poplar-trees, XVII. 754, 759, 765—use of the wood in joinery, XII. 817—specific

POP—POR

- gravity of the wood, 89—as timber trees, XXI. 278.
 POPO, Great and Little, African towns, XVIII. 337.
 POPOCATEPETL, volcano, XVIII. 338; XIV. 714—height of, XVII. 645, 593.
 POPPÆA (Sabina), XVIII. 338; XIX. 337.
 POPPI, town of Tuscany, XVIII. 338.
 Poppy cake, as manure, II. 405—analysis of, ib.
 —, order of plants, V. 182.
 —, cultivation of, in Bengal, IV. 649.
 —poppy-seed oil, XVI. 495—Mexican, 496.
 POPULATION, XVIII. 338—its increase in America, II. 708—as influencing agriculture, 267—capability of America of supporting an immense, 710—its redundancy a reason for colonization, VII. 136—Malthus's theory of, 137—tendency of the cottage system to increase it, 433, 434—effects of the cotton manufacture on, 454—emigration a remedy for superfluous, VIII. 649—Filangieri on, IX. 576—its tendency to increase, XIV. 441—comparison of postal correspondence with the, XVIII. 425—of Egypt, ancient and modern, VIII. 426, 444—England, 753—Europe, IX. 393—France, X. 276—Ireland, XII. 508—State of New York, XVI. 217, 218—India, XI. 463—Russia, XIX. 521—Scotland, XIX. 799—United States, XXI. 622. See the Geographical Articles.
 Porambonites, fossil mollusks, XVII. 104.
 PORAMUSHIR, island, XVIII. 360.
 PORCELAIN, XVIII. 360—Chinese, VI. 586, 587—Japanese, XII. 693—manufacture of, in England, VIII. 732—Shropshire, XX. 230—France, X. 255—photography on, XVII. 551—porcelain earth or clay, XV. 83; XVII. 623. See Kaolin—porcelain tower of Nanking, XV. 774—specific gravity of, XII. 88—manufacture of, in Spain, XX. 490—of Kiang-see, XIII. 79. See Pottery.
 —, spar, XV. 74.
 Porcellia, genus of mollusks, XV. 375—fossil, XVII. 109.
 PORCH, XVIII. 360.
 PORCUNA, town in Spain, XVIII. 360.
 Porcupine, XIV. 187; XVII. 632—skull and teeth of, XVI. 453—jaw, 419.
 PORDENONE, town in Italy, XVIII. 360.
 —, surname of G. A. L. Regillo, Italian painter, XVIII. 360.
 Pores in the leaves of plants, V. 103.
 Porewort, order of plants, V. 183.
 Porifera, zoophytes, XXI. 1008.
 PORISM, XVIII. 360—Euclid's last treatise on, X. 500—Playfair on, XVIII. 5—restoration of Euclid's Porisms by Dr Simson, XX. 300.
 Poritida, zoophytes, XXI. 1005.
 Pork, cutting and curing of, II. 356—as food, IX. 762—value of the imports of, VIII. 735.
 POROS, island, XVIII. 366.
 PORPHYREON, city of Phœnicia, XVIII. 366.
 Porphyrio, genus of birds, XVI. 807.
 Porphyrops, genus of insects, IX. 243.
 PORPHYRY, XVIII. 366, 14; XII. 194—on Egyptian writing, XI. 376—did he forge Sanchuniathon's cosmogony? XIX. 595.
 —, in geology, XV. 131—trachytic, 132—felstone, or felspar, 134—quartziferous, 135—in Scotland, XIX. 793—its resistance to crushing, XX. 718.
 Porpoise, XIV. 225—teeth of, XVI. 445—white, at the mouths of the Danube, IV. 742.
 Porret on electric currents, XXI. 629.
 Porro (M.), his method of illuminating micrometers, XIV. 745—his micrometer, 752—his helioscope, XXI. 133.
 PORSENA, or Porsenna (Lars), king of Clusium, XVIII. 366; XIX. 298.
 PORSON (Richard), XVIII. 366.
 Port, or harbour, XVIII. 371.
 —, in sea language, XVIII. 371.
 Porta (Baptista), on optics, I. 624; XIII.

POR—POR

- 449; XVI. 525—popularity of his *Magia Naturalis*, I. 625—his physical researches, IV. 449—on the concentration of cold by reflection, VII. 99; I. 762—on dew, VII. 766—on anaesthetics, VI. 632—gunpowder, XI. 152—principle of the stereoscope explained by, XX. 684.
 Porta (Giacomo della) his merits as an architect, II. 452.
 — (Guglielmo), sculptor, XIX. 863.
 — (Giambattista della), on pneumatics, XX. 573.
 Portable steam-engines, XX. 614.
 PORTADOWN, Irish town, XVIII. 371; II. 613.
 PORTAFERRY, Irish town, XVIII. 371; VIII. 122.
 Portal (Antoine), his system of anatomy, II. 767; III. 73.
 PORTALEGRE, Portuguese town, XVIII. 371.
 Portales, VI. 553.
 PORTARLINGTON, Irish town, XVIII. 371, 728, 730.
 PORT-AU-PRINCE, XVIII. 371, 376.
 PORTCULLIS, XVIII. 371; VI. 327.
 PORT ELIZABETH, XVIII. 371.
 Porte (the Sublime), XXI. 380.
 Portenau. See Pordenone.
 Porteous mob, VIII. 393.
 PORTER, liquor, XVIII. 371; IX. 759—brewing of, V. 330—cause of its dark colour, 331—draft, ib.—alcohol in, 332—London porter, XIII. 665; XIV. 809 use of, in France, X. 256.
 — (JANE), novelist, XVIII. 371—her Scottish Chiefs, XIX. 281.
 — (SIR ROBERT KER), XVIII. 371—on the ruins of Babylon, IV. 344—his account of Persepolis, XVII. 431, 432.
 — (G. RICHARDSON), statish, XVIII. 372.
 — (Rev. N.), on Coleridge, VII. 110.
 — (Rev. J. L.), on the ruins of Palestine, XVII. 189; of Palmyra, 222, 223.
 — (Mr), on the sugar cane, XX. 792.
 PORTEUS (Beilby), XVIII. 372.
 PORT-GLASGOW, XVIII. 372.
 Portmeus, genus of fishes, XII. 293, 298.
 PORTICI, XVIII. 373; XX. 240—dial found at, VII. 774—palace at, XV. 782.
 PORTICO, XVIII. 373; III. 512—Palladio's porticoes, III. 452—hardly known in Italian architecture, ib.
 Porticus, in architecture, III. 512.
 PORT-JACKSON, XVIII. 373.
 PORTLAND, isle of, XVIII. 373—convicts employed on, 583—harbour of refuge at, XI. 221—quarries of, VIII. 111—oolite, XV. 206, 208—sands, 208.
 — stone, XV. 208—boring of, V. 44—vast blocks of, VIII. 112—as a building stone, XX. 712—its transverse strength, 717—resistance to crushing, 718.
 —, in the State of Maine, XVIII. 373.
 — VASE, XVIII. 373; X. 657—Wedgwood's imitations of, XVIII. 434.
 — Roads, construction of a break-water in, recommended, V. 310.
 — (Duke of). See Bentinck.
 — cement, V. 742; XX. 714, 715.
 PORT LOUIS, in the Mauritius, XVIII. 374; XIV. 363, 364.
 PORT MAHON, XVIII. 374; XV. 251.
 PORTO ALEGRE, town in Brazil, XVIII. 374.
 PORTOBELLO, in Midlothian, XVIII. 374; VIII. 409, 410, 411.
 —, in Panama, taken by the Buccaneers, V. 711.
 Porto d'Anzio, XVII. 240.
 PORTO FELIX, town in Brazil, XVIII. 374.
 PORTO FERRAJA, in Elba, XVIII. 374; VIII. 521.
 PORTO MAURIZIO, XVIII. 374.
 PORTO NUOVO, in India, XVIII. 374.
 PORTO RICO, island, XVIII. 374—sugars of, XX. 795.
 PORTO SANTO, in Madeira, XVIII. 375; XIII. 799.
 PORT OF SPAIN, XVIII. 375.

POR—POS

- PORTPATRICK, in Wigtonshire, XVIII. 375—violence of the waves at, XI. 217.
 PORT PHILIP, XVIII. 376; IV. 286 *et seq.*; XIV. 478.
 Portrait painter, a blind, IV. 781.
 Portrait-painting, XVII. 56, 57—Sir Joshua Reynolds on, III. 716.
 Portraits of Christ, XII. 764, 765—photographic portraits, XVII. 553—historical portraits, III. 716.
 PORTREE, XVIII. 376; XX. 317.
 PORT REPUBLICAIN, XVIII. 376; XI. 256.
 — ROYAL, in Jamaica, XVIII. 376; XII. 673.
 — in Martinique, XIV. 322.
 — two nunneries so named, XVIII. 376. See Arnauld.
 PORTS of a ship of war, XVIII. 371.
 Portsea, XVIII. 377, 378; XI. 204.
 PORTSMOUTH, XVIII. 377; XI. 203—direct Portsmouth railway, ib.—naval academy at, II. 71—block-machinery at, I. 879; IV. 783—fire in the dockyard of, in 1776, V. 504—fortification of, 516, 517—basin at, VIII. 79—dockyard, 83—Naval College, ib.—naval architectural school, ib.; XX. 134—harbour, VIII. 721—convict establishment at, XVIII. 583—early origin of dockyard, XX. 120; improved by Henry VIII., 126—experiments at, in firing at iron-plates, XX. 183.
 — in the state of New Hampshire, XVIII. 380.
 —, in the state of Virginia, XVIII. 380.
 —, in the state of Ohio, XVIII. 380.
 PORTUGAL, XVIII. 380; IX. 403—construction of a map of, II. 62—Royal Academies of Science and Portuguese history, 67, 69—colonies, 699, 702—settlements in Angola, III. 166—pointed architecture, 449—army, 643—discovery and settlement of Brazil, V. 279—war with France and Spain in 1762, 465—French invasion of in 1807, 603; X. 148—British troops sent to in 1826, V. 650—settlements in Ceylon, VI. 395—colonies, VII. 149—commercial treaty with Britain in 1703, 193—trade with England, VIII. 732, 733—Indian possessions, X. 689, 610—language, XIII. 213—coins, XV. 442, 444; XVI. 387—newspapers, 203—postal system, XVIII. 424—romance, XIX. 265—monarchy, XV. 414—Osorio's work on its condition under Emmanuel, XVII. 4—slave-trade, XX. 322, 323—tobacco manufacture, XXI. 294—weights and measures, 813—wines of, 885—map of, XX. Plate. See Alphonso, Portuguese.
 — Laurel, XVII. 761.
 Portugalete, silver mines of, IV. 828.
 Portuguese, their missions to Abyssinia, II. 56—first circumnavigated Africa, 210—their quarrels with the Hottentots, 222—maritime discoveries, X. 470, 474—intercourse with the Japanese, XII. 696; and Chinese, XIII. 756—their progress in discovery, XX. 124—not the originators of the slave-trade, 320. See Portugal.
 — man-of-war, Zoophyte, XXI. 999.
 Portulacaceæ, nat. ord. of plants, V. 193.
 PORTUMNA, Irish town, XVIII. 399.
 PORTUS (Æmilius), Greek critic, XVIII. 399.
 — (Francis), philologist, XVIII. 400.
 Port wine, XVI. 519; XVIII. 397; XXI. 885—specific gravity of, XII. 89—alcohol in, XXI. 889, 890.
 PORUS, Indian Prince, XVIII. 400—defeated by Alexander the Great, XIII. 769.
 POSEIDON, XVIII. 400; XVI. 149.
 POSEN, in Prussia, XVIII. 400—agriculture of, 666—swarm of ants at, III. 265.
 Posidonia, or Pæstum, XVII. 43.
 POSIDONIUS, XVIII. 400; X. 501—on the earth's size, IX. 547; X. 465.
 Posidonomya, fossil mollusks, XVII. 106.
 Posilipo, promontory of, XX. 240.
 PÖSING, town in Hungary, XVIII. 401.

POS—POT

- Position-micrometers, XIV. 753.
 Positive electricity, VIII. 535, 537.
 POSITIVISM, XVIII. 401; VII. 211.
 POSSESSIVE, XVIII. 401—case, X. 749—pronouns, 756.
 PÖSSNECK, town in Saxe-Meinigen, XVIII. 401.
 Post, XVIII. 401.
 Postage of letters in Britain, XXI. 67—in Belgium, IV. 626—Canada, VI. 155—existing rates of, in Britain, XVIII. 417. See Post-office.
 POSTERN, XVIII. 401.
 POSTH, XVIII. 401.
 Post-horse, XI. 660.
 Posticum, in architecture, III. 512.
 POSTLIMINIUM, XVIII. 401.
 Postmaster-general, XVIII. 403, 405—for foreign parts, 403.
 Postmasters, license duties paid by, VII. 43; XIII. 435.
 Post-Office, XVIII. 402—in London, XIII. 669—Glasgow, X. 651—Canada, VI. 155—Scotland, XIX. 810—revenue from, in Austria, IV. 316; France, X. 274—abuses of franking, V. 468—transmission of newspapers, XVI. 192—revenue of that of the United Kingdom, XXI. 68—in the United States, XXI. 427, 767.
 Post-pleistocene strata, XVII. 637.
 POSTULATE, XVIII. 427; XIII. 576.
 Pot, and Pot-book, in gold coining, VII. 85.
 Potameides, river-nymphs, XVI. 396.
 Potamides, fossil mollusks, XVII. 110.
 Potamogetonaceæ, nat. ord. of plants, V. 214.
 Potaroo, in zoology, XIV. 176.
 POTASH, XVIII. 427; VI. 484—caustic, 485—in plants, II. 388—nitrates of, 413—salts of, ib.—silicates, ib.—carbonates, ib.—proportion of, in felspars, 389; VI. 524—in farm-yard manure, II. 403—gunpowder from chlorate of, XI. 158—poisonous properties of, XIV. 434—optical properties of the sulphate of, XVI. 663.
 Potash-alum, II. 635, 636; XV. 97.
 Potassa, in minerals, XV. 65—chlorate of, discovered by Berthollet, IV. 677; its poisonous properties, XIV. 434.
 Potassium, VI. 484—Davy's discovery of, VII. 669—an element in minerals, XV. 60, 61.
 POTATO, XVIII. 427; IX. 760—culture and varieties of, II. 315; XI. 739—inorganic matter in the leaves of, II. 335—composition of the ash of, 387—sulphur in, 388—mineral matters and nitrogen removed from land by a crop of, 417—state of the people where it forms the principal food, VII. 435—disliked in Lombardy, XIII. 657—its culture in Chili, VI. 549; Mexico, XIV. 716; Bengal, IV. 649; India, XI. 455—value of the imports of, VIII. 785—brandy distilled from in Norway, XVI. 326—potato spirit convertible into rum, VI. 516—acreage under, in Ireland, XII. 515, 516; amount of produce in 1855, 517—acreage in Scotland, XIX. 797; produce, ib.—distilleries from, in Prussia, XVIII. 666.
 — disease, II. 264; V. 172, 670; XI. 739—effects of, II. 315—comparatively little felt in East Lothian, II. 370.
 — order of plants, V. 201.
 POTEKIN (G. Alexandrovich), Russian statesman, XVIII. 428; XIX. 485; XXI. 370, 371.
 Potent-counter-potent, in heraldry, XI. 325.
 POTENTIAL, in grammar, XVIII. 428.
 —, in electrical attraction, I. 989, 994.
 POTENZA, town in Naples, XVIII. 428.
 Potentillidæ, nat. ord. of plants, V. 191.
 POTHIER (R. Joseph), jurist, XVIII. 423.
 Potidaea, Socrates at, XX. 375.
 Potin, metal used in coining, XVI. 353.
 POTOMAC, river, XVIII. 429; XIV. 330 XVII. 647.

POT—POW

Potos, genus of mammalia, XIV. 155.
 POTOSI, in Bolivia, XVIII. 429; II. 669;
 IV. 821, 828—silver mines of, 825; XV.
 235—climate, IV. 826—population, 827
 —elevation of its site, XVII. 593.
 —(San Luis), Mexican city and state,
 XIV. 726, 718.
 Potowatomies, their marriage customs,
 II. 681—their cannibalism, 682.
 POTSCHINKI, Russian town, XVIII. 429.
 POTSDAM, in Prussia, XVIII. 429.
 —sandstone, protichnites of, XVII.
 130, 131.
 Potstone, XV. 79.
 POTT (Percival), surgeon, XVIII. 429;
 XX. 819.
 —(Mr), on alum, II. 635.
 POTTER (John), archbishop, XVIII. 430.
 —(PAUL), animal-painter, XVIII.
 430.
 —(Prof.), his photometer, XVII. 555.
 —(Mr), his microscope, XIV. 784—
 on the illumination of microscopic ob-
 jects, 796—his mode of casting specula,
 XXI. 135.
 Potter's clay, V. 343; XV. 83; XVIII.
 438.
 —kiln, XVIII. 441—wheel, 431.
 POTTERY, XVIII. 430; XIV. 440—Delft-
 ware, VII. 705—cooling vessels, 100.
 Potteries in England, VIII. 732; France,
 X. 256; Egypt, VIII. 443—Staffordshire,
 XX. 530—of Arretium, III. 524.
 POTTINGER (Sir Henry), XVIII. 445; VI.
 597; XIII. 35—his travels in Asia, III.
 739, n. 3—in Beloochistan, IV. 640, 641,
 642—on the character of the Asiatics,
 III. 749, n. 2.
 —(Lieut. Eldred), his defence of
 Hirat, XVII. 442.
 POTTSVILLE, XVIII. 445.
 Pouchet (F. A.), his work on the cock-
 chafer, IX. 24.
 —, on the circulation of mollusks,
 XV. 357.
 Poudrette, manure, II. 408.
 POUGHKEEPSIE, town in New York, XVIII.
 446.
 Pouillet (M.), on the electricity developed
 in combustion, VIII. 567—and by vege-
 tables, 570; V. 170—on magnetic metals,
 XIV. 16—his astatic needles, 90—his
 Pyrohelium, 638—on the heating
 power of the sun, 637—on atmospheric
 electricity, 661—his hygrometer, XVIII.
 702—his electrical battery, XXI. 617—
 on the conductive power of liquids, 621
 —his chronoscope, 644—his electrical
 experiments and researches, 624, 651.
 Poulitce, XX. 823; XXI. 555, n. 3.
 POULTRY, XVIII. 446; XVI. 789—as ar-
 ticles of food, IX. 762, 766—manage-
 ment of, II. 356—in France, X. 249—
 artificial hatching of, XVIII. 815.
 Pouncey (Mr) his photographic process,
 XVII. 550.
 POUND, weight, XVIII. 446.
 —, money, XVIII. 446—value of, in
 the 15th and 16th century, VII. 375, n.
 1—degradation of, XV. 432.
 —(Mr), V. 263.
 POUNDAGE, XVIII. 446; XXI. 307.
 POURCAIN (St), in France, XVIII. 446.
 POUSSIN (Gaspar), painter, XVIII. 446.
 —(NICOLAS), painter, XVIII. 446—
 character of his works, III. 710, 711;
 XVII. 76.
 Pouteau on the nerves, II. 814.
 Powder. See Gunpowder.
 Powders, electricity of, VIII. 564.
 Powell (Prof.), on the undulatory theory
 of light, I. 921—on the quality of heat
 transmitted by glass, 954.
 Power (Dr), his experiments on atmo-
 spheric pressure, XVIII. 27.
 —(Madame), aquaria invented by,
 XV. 328—on the argonaut, 402.
 —, mechanical, measurement of, XX.
 601. See Prime movers, Energy.
 Power-loom, invention of, VI. 305; VII.
 450; XXI. 787—number of power-loom
 in Britain, XIV. 278; Manchester, 252;
 Lancashire, VII. 457—wages of power-

POW—PRE

loom weavers, XXI. 919, 920—struggle
 of hand-loom against, 781.
 Powhattsans, II. 681.
 POWNALL (Thomas), XVIII. 446.
 Poyaise, XI. 77.
 Poynings, his government of Ireland, XII.
 474.
 POZO-BLANCO, town in Spain, XVIII. 446.
 Pozzo di Borgo (C. Andrea), diplomatist,
 XVIII. 446.
 Pozzolana, cement, XVIII. 698.
 Pozzuoli, XV. 782.
 Practice, in arithmetic, III. 593.
 PRADO, town in Portugal, XVIII. 447.
 PRAED (W. Mackworth), XVIII. 447.
 PREFECT, XVIII. 447.
 Præfloration, in botany, V. 121.
 Præfoliation of leaves, V. 86.
 PRÆMUNIRE, XVIII. 447.
 PRÆNESTE, in Latium, XVIII. 447.
 Præses, XVIII. 509.
 Præter-perfect tense, X. 765, 767.
 Præter-imperfect tense, X. 765, 767.
 PRÆTOR, XVIII. 448; XIX. 298.
 PRÆTORIANS, XVIII. 448; XIX. 332 *et*
seq.—Pertinax murdered by, XIX. 346.
 PRAGA, town in Poland, XVIII. 448.
 PRAGMATIC SANCTION, XVIII. 448; XII.
 22.
 PRAGUE, XVIII. 448; IV. 310—national
 museum library at, XIII. 424—meteorolo-
 gical observations at, XIV. 687—battle
 of, XVIII. 653—university of, XXI.
 492.
 Prairies, American, XVII. 609—of Illinois,
 XII. 361; Indiana, 371; Iowa, 459;
 Louisiana, XIII. 700.
 Praise, love of, I. 398.
 PRAM (C. Henriksen), Danish poet, XVIII.
 450; XIX. 694.
 Pranth, on the law of non-contradiction,
 XIII. 573, n.
 Prase, mineral, VI. 67; XV. 69.
 Praseolite, mineral, XV. 89.
 Prasin, mineral, XV. 103.
 Praslin, Duke of, his murder of his wife,
 X. 229.
 Prasocuris, genus of insects, IX. 150.
 Pratiapgarh, in Oude, XVII. 17.
 Pratincoles, birds, XVI. 808.
 PRATO, Tuscan town, XVIII. 450.
 PRATT (Charles), Earl of Camden, XVIII.
 450.
 Prawn, VII. 541; IX. 765.
 Praxagoras, anatomist, II. 750—his skill
 in surgery, XX. 811.
 PRAXITELES, Greek sculptor, XVIII. 451
 —his works, XIX. 858.
 Prayer, danger of it degenerating into
 superstitious formalities, I. 494—read,
 and extemporaneous, 542—Lord's
 Prayer, abuse of, I. 493.
 Preaching, as a means of grace, XXI. 219.
 PREBEND, XVIII. 451; VIII. 744.
 PRECEDENCE, XVIII. 451.
 PRECESSION OF THE EQUINOXES, XVIII.
 452; IV. 14—the discovery of, ascribed
 to Hipparchus, III. 791; but known
 before his time, IV. 14—Laplace's dis-
 coveries relative to, III. 812—secular
 variation of, IV. 131.
 PRECIOUS METALS, XVIII. 459—gold and
 silver fittest for money, XV. 417—their
 introduction, *ib.*—production of, 420—
 expense of a currency consisting of, 425
 —value of, in different countries, IX.
 431—what profits does a country derive
 from the possession of? VII. 145—effect
 of their increase on productive industry,
 188—exports of, from Chili, VI. 550;
 from Mexico, XIV. 717—produce of
 Russian mines in, XIX. 542; American,
 II. 706; of the world, *ib.* See Coinage,
 Money, Mines, Gold, Silver.
 Predazite, mineral, XV. 92.
 PREDESTINATION, XVIII. 477—Calvin's
 controversies regarding, VI. 110—a
 Mohammedan doctrine, XV. 304, 308.
 Predicables, III. 552; XIII. 599.
 Predicaments, III. 552.
 PREDICATE, in logic, XVIII. 479; XIV.
 593.
 Predication, forms of categorical, XIII.

PRE—PRE

583—through singular terms, *ib.*—
 through common terms, 584, 585, 590,
 591—in comprehension, 593—in exten-
 sion, 592—transference from whole to
 whole, 594.
 Pre-emption Act in the United States,
 XXI. 425.
 PREEZ, or Preetz, town in Denmark,
 XVIII. 479.
 PRE-EXISTENCE, XVIII. 479; XIV. 628.
 Prefecture, in France, X. 280.
 Prefixes, in the Kaffir language, XIII. 226.
 Pregel, river, XVII. 647; XVIII. 662.
 Pregnancy, limits and signs of, XIV. 426
 —a bar to execution of a criminal, 445.
 See Gestation.
 Prehension, organs of, XIV. 134.
 Prehnite, mineral, XV. 73—pyro-electri-
 city of, VIII. 561.
 Prehnitoid, mineral, XV. 73.
 Preller and Co.'s combing machinery,
 XXI. 925.
 Premare (Père), his specimens of Chinese
 poetry, VI. 577.
 Premises, in reasoning, XIV., 593.
 PREMIUM, in insurance, XVIII. 479; XII.
 409.
 Premnas, genus of fishes, XII. 265.
 PREMONSTRATIENSIS, XVIII. 479.
 PRENZLOW, Prussian town, XVIII. 479.
 PREPOSITION, in grammar, XVIII. 479;
 X. 778, 783, 791—in Egyptian grammar,
 XI. 425.
 Prepulsion, mechanism of, in human ana-
 tomy, III. 40.
 Prepuce, VI. 733. See Foreskin.
 Pre-Raphaelitism, in painting, XVII. 86.
 Prerogative (Royal), in England, VIII.
 776, 792.
 Presburg, population of, XII. 11.
 Presbyter, IX. 279.
 Presbytery, XII. 371; XVIII. 482, 493—
 representation of the people in, 483.
 Presbyterian Churches in Ireland, XII.
 532; Scotland, XVIII. 492; United
 States, XXI. 422. See Presbyterianism.
 PRESBYTERIANISM, XVIII. 480.
 Presbyterians, IX. 394—ordination among,
 XVI. 704—persecution of, in Scotland,
 XIII. 323. See Presbyterianism.
 PRESCOT, in Lancashire, XVIII. 502.
 PRESCOTT (William Hickling) historian,
 XVIII. 502—on the civilization of
 ancient Mexico, III. 502—on the roads
 of the ancient Peruvians, XVII. 461—
 on the civilization of ancient Peru,
 462.
 —(H. P.) on tobacco and its adulter-
 ations, XXI. 295.
 PRESCRIPTION, in medicine, XVIII. 507—
 in English and Scotch law, 508.
 PRESENT TENSE, in grammar, XVIII. 509;
 X. 764, 766.
 PRESENTATION to a living in the church,
 XVIII. 509.
 Presently, VIII. 9.
 Preservation of food, IX. 767—of timber,
 XXI. 779; see Timber.
 Presidencies (Indian), XI. 529.
 PRESIDENT, XVIII. 509—Lord President
 of the Council, *ib.*—of the United
 States, VIII. 775—his salary, XXI. 429
 —Name of 1st, Washington; 2d, Adams
 (John); 3d, Jefferson; 4th, Madison;
 5th, Adams (John Quincy) Jackson;
 6th, Buren; 7th, Harrison; 8th, Tyler;
 9th, Polk; 10th, Taylor; 11th, Fill-
 more, XXI. 439-444.
 PRESS, XVIII. 509—its condition in France
 at different periods, X. 170, 197, 198,
 211, 213—newspaper press of the United
 States, XXI. 423.
 —(Liberty of the). See Liberty of
 the Press, Libel.
 —, machine, Bramah's hydrostatic
 press, II. 102; XII. 75, 178; V. 273;
 VI. 91.
 —, printing-press, XVIII. 533, 544,
 558.
 PRESSBURG, town in Hungary, XVIII.
 509.
 Pressing of printed sheets, XVIII. 547—
 in woollen manufacture, XXI. 923.

PRE—PRI

Pressirostres, tribe of birds, XVI. 796.
 Pressure, mechanical action of, VIII. 322
 —composition of pressures, 335—elec-
 tricity produced by, 562—of fluids, XII.
 78—of water in pipes, 135—centre of,
 80—line of pressures, XIV. 381—effect
 of, on the double refraction of crystals,
 XVI. 657—of the atmosphere; its in-
 fluence on health, XIX. 609. See At-
 mosphere—equilibrium of pressures,
 XX. 538 *et seq.*—decomposition and
 recomposition of, 542—relation of the
 pressure and temperature of steam, 564
 —pressure of steam, 563, 571. See Hy-
 drodynamics.
 PRESTEIGNE, town in Wales, XVIII. 509.
 PRESTER JOHN, XVIII. 509; II. 40; IV.
 653; X. 393, 476.
 PRESTO, in music, XVIII. 510.
 PRESTON, town in Lancashire, XVIII. 510
 —battle of, V. 454.
 PRESTONPANS, town in Haddingtonshire,
 XVIII. 510—battle of, V. 460.
 Prestwich (Mr) on the eocene tertiary
 formations, XV. 157, and n. 1; 212,
 213.
 PRESTWICK, Scotch burgh, XVIII. 510.
 Presumptive heir, III. 307.
 Pretender (The). See Charles Edward.
 Preterition, in theology, XXI. 217.
 PRETERITE, XVIII. 510. See Præter-per-
 fect.
 Pretor. See Prætor.
 Pretsch (Paul), photo-galvanography in-
 vented by, XVII. 544, 545; XXI. 636.
 PREVESE, town in Turkey, XVIII. 510.
 Prevot, romances of, XIX. 287.
 Provost (Benedict), his experiments on
 dew, VII. 768—on the colours of metals,
 XVI. 686.
 —(Pierre), his theory of the moveable
 equilibrium of heat, I. 944.
 —(Sir George), V. 617.
 Prey (birds of), XVI. 737—diurnal, 738—
 nocturnal, 745. See Raptores.
 Preysler (J. Daniel), his work on insects,
 IX. 8.
 Prezemislas, king of Poland, XVIII. 141.
 Priacanthus, genus of fishes, XII. 277.
 PRIAM, king of Troy, XVIII. 511—cha-
 racter of, 101.
 Priapulus, echinoderms, XXI. 987.
 PRIAPUS, XVIII. 511.
 PRICE (Richard), D.D., XVIII. 511—his
 work on the principal questions in
 morals, I. 377—considered the under-
 standing as an independent source of
 simple ideas, 378—does not explain the
 authority of conscience over the will,
ib.—suggested the sinking fund scheme
 to Mr. Pitt, V. 518—on Reversionary
 Payments, III. 221, 222; XV. 603, 605
 —on the distinction between the *will* of
 God, and his *nature*, 556—on the popu-
 lation of England, VIII. 753—on life-
 assurance, XII. 398, 399—on mortality,
 XV. 625, 633, 634; XVIII. 351 *et seq.*
 —(THOMAS), XVIII. 511.
 —on carpentry, XII. 805; XIX. 385.
 —(William), glass-painter, X. 660.
 Prices, computation of, III. 593—in an-
 cient Athens, IV. 217—effect of the in-
 crease of the precious metals on, VIII.
 188; XVIII. 475—effect of bank-notes
 on, VII. 189—effects of war expenditure
 on, 190, 199—prices of grain in England
 from 1646 to 1852, 397, 378—effects of
 the subdivision of land on the price of
 raw produce, 427—by what regulated,
 XVIII. 299—influence of competition
 on, 242—always coincident with the
 cost of production, *ib.*—prices of
 hounds, XI. 770. See Corn-Laws,
 Taxation.
 PRICHARD (James Cowles), XVIII. 512—
 on the unity of the human race, II. 121;
 XVII. 536—on the indigenous Ameri-
 cans, II. 677—on the Celtic nations, VI.
 363 *et seq.*; XVII. 530—on ethnology,
 IX. 341, 343—on insanity, XIV. 526 *et*
seq.—on the varieties of the human race,
 XVII. 527.
 Pricking, of horses, XXI. 560.

PRI—PRI

Prikles of plants, V. 75.
 Prickly-ash, order of plants, V. 189.
 Pride (Col.), V. 411—Pride's purge, *ib.*
 PRIDEAUX (Humphry), divine, XVIII. 512
 —on the Pentateuch and Canon, IV. 695, 696.
 —(JOHN), bishop, XVIII. 512.
 —(Syme), his furnace-door for admitting air, XX. 357.
 PRIEGO, town in Spain, XVIII. 513.
 PRIESSNITZ (Vincenz), hydropathist, XVIII. 513.
 PRIEST, XVIII. 513; I. 510, *n.* 1—distinguished from minister, 511—duties of, *ib.*, 512—high priest, 488—of the gospel, 512—Christ's office of a, XXI. 212.
 Priesthood, Greek, IV. 217.
 PRIESTLEY (Joseph), XVIII. 513—his opinion of Hartley's theory, I. 171, and *n.* 2—on the composition of the atmosphere, IV. 180—burning of his house by the mob at Birmingham, 730; V. 539—on expansion from electricity, VIII. 589—on the chemical power of electricity, 594—Horsley's controversy with, XI. 690—on the resurrection of brutes, 763—library founded by his recommendation at Leeds, XIII. 314—a follower of Hartley, XIV. 596.
 Prieto (General), VI. 553.
 Primary epoch, in geology, XV. 195, and *n.* 1, 196—rocks of Spain, XX. 484.
 —qualities of body, XIV. 570.
 PRIMATE, XVIII. 515. See Archbishop.
 PRIMATICCIO (Francesco), painter, XVIII. 515; XVII. 63.
 Prime movers, in mechanics, XIV. 416.
 Primer, type, XVIII. 536; XXI. 401, 403.
 Primeval ancient history and historians, XI. 543, 548.
 PRIMING, XVIII. 515; XI. 98. See Gun-making.
 —, in steam-boilers, XX. 649—causes of, 650.
 Primitive Methodists, XIV. 694.
 PRIMOGENITURE, XVIII. 515—right of, not recognised in France, VII. 432.
 Primrose, order of plants, V. 203.
 —, evening, order of plants, V. 192.
 Primula, genus of plants, V. 203; XI. 749.
 Primulaceæ, nat. ord. of plants, V. 203.
 PRIMUM MOBILE, XVIII. 516.
 PRINCE, XVIII. 516.
 —(Le), the inventor of aquatinta engraving, VIII. 801.
 —(Mr), his air pump, XVIII. 42.
 Princedoms in Europe, IX. 397.
 PRINCE EDWARD ISLAND, XVIII. 517.
 —OF WALES ISLAND, XVIII. 516.
 Prince's feather, plant, V. 203.
 —ISLAND, XVIII. 518.
 —ISLANDS, XVIII. 518.
 —METAL, XVIII. 516.
 Princeton, in New Jersey, battle of, XVI. 176; XXI. 751.
 PRINCIPAL, XVIII. 518; II. 236.
 —, XVIII. 518; XVI. 711.
 —, in colleges, XXI. 483 *et seq.*
 PRINCIPATO CITRA, XVIII. 518; XX. 237, 255.
 —ULTRA, XVIII. 519; XX. 237, 255.
 PRINGLE (Sir John), XVIII. 519; IV. 420—letter of, to Forbes of Culloden, about Alex. Cunningham's papers, VII. 587.
 —(THOMAS), XVIII. 519.
 Prinsep (James), his interpretation of Buddhist edicts, XVII. 530; X. 724.
 —(Mr), on the pyrometer, XVIII. 704, 705.
 PRINTING, XVIII. 520—invention of, IV. 706—opportunity and effects of the invention, 709; I. 17; XIII. 388—books before the invention of, IV. 706—early, 708—for the blind, 776—Bramah's plan for printing by a roller, V. 273—correction of proofs, VII. 415—in Glasgow, X. 653—Fust's share in the invention of, X. 362—works on the origin and progress of, in Earl Spencer's library, XIII. 399—lithographic, 513—printing ink, XII. 384—printing-presses and machines,

PRI—PRO

XVIII. 544, 558, 559 *et seq.*—in Turkey, XXI. 383. See Calico-printing, Bibliography, Copperplates, Gutenberg, Typefounding.
 PRINTS, XVIII. 563—early prints, from woodcuts, XVIII. 523, and *n.* See Engraving.
 Prionon, genus of fishes, XII. 304.
 —, genus of mammalia, teeth of, XVI. 441.
 Priodontes, genus of mammalia, XIV. 191.
 Prionii, tribe of insects, IX. 143.
 Prionites, genus of birds, XVI. 772.
 Prionodon, genus of fishes, XII. 323.
 —, genus of mammalia, XIV. 166.
 Prionodus, genus of fishes, XII. 286.
 Prionops, genus of birds, XVI. 748.
 Prionotus, genus of fishes, XII. 282.
 Prionurus, genus of fishes, XII. 304.
 Prionus, genus of insects, IX. 144.
 Priopis, genus of fishes, XII. 275.
 PRIOR, XVIII. 563; II. 13.
 —(MATTHEW), XVIII. 563—passage from his Alma on the seat of the soul, I. 69, *n.* 2—poetry of, XVIII. 124.
 Priories, in what they differ from abbeys, II. 13.
 PRISCIANUS, grammarian, XVIII. 563.
 PRISCILLIANISTS, XVIII. 563.
 PRISM, XVIII. 563; X. 535—in mineralogy, XV. 46, 47—mensuration of, XIV. 506—refraction by, XVI. 561, 562—Nicol's prism, I. 913; XIV. 789; XVI. 649—method of cutting it from crystal, XIV. 751.
 Prismatic spectrum. See Spectrum.
 Prismoid, mensuration of, XIV. 506.
 PRISON; PRISON DISCIPLINE, XVIII. 564—prisons in China, VI. 568—Edinburgh, VIII. 404—London, XIII. 678—New York, XVI. 221—Paris, XVII. 284—Belgium, IV. 614—Richmond penitentiary, in Dublin, VIII. 220, 221—Howard's reforms in, XI. 783—diet of, VIII. 22—state of, XIV. 444. See Penitentiary.
 Prisoners, in England, VIII. 748—proportion of, to the population, 749.
 PRISREND, town in Turkey, XVIII. 587.
 Pristacanthus, genus of fossil fishes, XII. 340.
 Pristidae, family of fishes, XII. 327.
 Pristigaster, genus of fishes, XII. 237.
 Pristigenys, genus of fossil fishes, XII. 343.
 PRISTINA, town in Turkey, XVIII. 587.
 Pristiphorus, genus of fishes, XII. 325.
 Pristipoma, genus of fishes, XII. 286—fossil, 344.
 Pristipomoides, genus of fishes, XII. 286.
 Pristis, genus of fishes, XII. 327—fossil, 342.
 Pristiurus, genus of fishes, XII. 323.
 Pritchard (Mr), on the feeding of infusoria with coloured substances, III. 208, *n.* 2—his work on animalcules, 212—his microscope, XIV. 763—his diamond lens, 766—his sapphire lens, 767—on doublets, 773, 774—his triplet, 775—his compound microscope, 780—on the oxyhydrogen microscope, 793—on test objects for the microscope, 802, 803—list of objects for, 806.
 Pritchett (Mr), his rifle ball, XI. 101.
 PRITZWALK, in Prussia, XVIII. 587.
 PRIVAS, town in France, XVIII. 587.
 PRIVATEER, XVIII. 587; XVI. 159.
 Privet, plant, XVII. 761.
 Privileges of universities, XXI. 453 *et seq.*
 PRIVITZ, town in Hungary, XVIII. 587.
 PRIVY-COUNCIL, XVIII. 587—their grants for education, XV. 822.
 Prize courts of the Admiralty, II. 146.
 Prize-money, XVI. 114.
 Prizes in universities, XXI. 464 *et seq.*
 Proa, kind of boat, IV. 800.
 PROBABILITY, XVIII. 588—calculation of, I. 223—doctrine of, 819; XIII. 232—Laplace's improvements in its investigation, I. 819; XIII. 232—of testimony and design, I. 820—as a guide

PRO—PRO

to discovery, *ib.*—probabilities of life, III. 245—Bernoulli's work on, IV. 673. See Chance, Combination.
 Probang, invention of, XX. 815.
 PROBATE of a will, XVIII. 637—duties on, XXI. 65, 66.
 Probation, XXI. 197.
 PROBLEM, XVIII. 637—problems in algebra, II. 538—resolution of geometrical, 542—in geometry, X. 508, 526—of the three bodies, III. 809; IV. 105; I. 828—inverse problem, in perspective, XVII. 449—in practical astronomy, IV. 110—Petersburg problem, XVIII. 601.
 Proboscidea, family of mammalia, XIV. 194.
 Proboscidea, division of insects, IX. 224.
 Proboscis of bees, IV. 571.
 PROBUS (Marcus Aurelius) XVIII. 637; XIX. 349—his government of Egypt, VIII. 473.
 —(Valerius), on punctuation, XVIII. 686.
 —(Æmilius), XVI. 149.
 PROCACCINI, family of Italian artists, XVIII. 637.
 —(CAMILLO), XVIII. 637.
 —(CARLO ANTONIO), XVIII. 638.
 —(ERCOLE), XVIII. 637.
 —(GIULIO CESARE), XVIII. 637.
 Procellaria, genus of birds, XVI. 811.
 Procerus, genus of insects, IX. 96.
 Process, in anatomy, II. 825.
 Prochaska (George), on the injectible and non-injectible parts of the body, II. 806—on the brain, 818—as the seat of the mental faculties, XVII. 558, 559—on the muscles, II. 821—on the nerves, 814—on the sensorium commune, XVII. 676.
 Prochilodus, genus of fishes, XII. 246.
 PROCIDA (Giovanni di), XVIII. 638; XX. 258; X. 13.
 —, island, XVIII. 638.
 PROCLAMATION, XVIII. 638.
 PROCLUS, XVIII. 638; X. 502; XVII. 233.
 Procnias, genus of birds, XVI. 751.
 Procolia, fossil reptiles, XVII. 152.
 PROCONSUL, XVIII. 639, 645; XIX. 315.
 PROCOPIUS, XVIII. 639; VII. 309; XIV. 455; XIII. 28.
 Procris, genus of insects, IX. 210.
 PROCURATES, XVIII. 639.
 PROCTOR, XVIII. 639.
 —, in universities, XVIII. 639—at Oxford, XXI. 456.
 PROCURATOR-FISCAL, XVIII. 639.
 Procurators, in universities, XXI. 446.
 Procyon, genus of mammalia, XIV. 154—teeth of, XVI. 462.
 PRODICUS, sophist, XVIII. 639.
 Producta, genus of fossil mollusks, XVII. 105.
 Productidae, family of fossil mollusks, XV. 338; XVII. 105.
 Production of wealth, XVIII. 224.
 Professions, their influence on health, XIV. 442.
 PROFESSOR, XVII. 639—professors at Paris, XXI. 448—Bologna, 451—Oxford, 457—Queen's University, Dublin, 489.
 Professorships at Oxford, XXI. 457; Cambridge, 463; St Andrews, 476; Glasgow, 478; Aberdeen, 481; Edinburgh, 484; Dublin, 487.
 Profits of trade, VII. 196—of mercantile speculation, 197—gross and nett profits, XII. 425; XVIII. 240—effect of, on rate of interest, XII. 425—advantage of high, XVIII. 233—their rate the true test of the advantage of employments, 238—equality of, 240—vary inversely as wages, 250—effect of the fluctuation of wages on, *ib.*—definition and theory of 252—circumstances which occasion a rise or fall of, *ib.*—extra profits, 253—influence of the decreasing fertility of the soil on, 254—taxes on, XXI. 45—may be lowered by taxes on raw produce, 64.
 PROGRAMME, XVIII. 639.

PRO—PRO

PROGRESSION, XVIII. 639—arithmetical, II. 500—muscles used in, III. 42.
 PROJECTILES, XVIII. 639; I. 888—resistance of the air to, XVIII. 67—possibility of a projectile from the moon reaching the earth, XIV. 635—Borda on, V. 36, 37. See Gunnery.
 PROJECTION OF THE SPHERE, XVIII. 639—orthographic and stereographic, X. 488, 489—globular, 491—Flamsteed's, 493—construction of maps by, 488.
 —in mechanics, XIV. 413—parallel projection of figures, 382—of systems of forces, 383.
 —in perspective, XVIII. 639—of points, XVII. 445—of straight and curved lines, 446, 447—in reference to drawings in joinery, XII. 806.
 PROLATION, XVIII. 639.
 PROLEGOMENA, XVIII. 640.
 Prolivity of style, occasions when useful, VIII. 233.
 PROLOGUE, XVIII. 640.
 PROME, town in India, XVIII. 640; V. 647, 784.
 Promerops, genus of birds, XVI. 771.
 Prometheus, matches, XIV. 351.
 PROMETHEUS, XVIII. 640.
 Promise, duty of performance of a, XV. 567.
 Promissory notes, IX. 446.
 PROMONTORY, XVIII. 640; X. 483.
 —of the ear, III. 46.
 Promotion, in the army, VII. 202.
 PROMPTER, in theatres, XVIII. 640.
 Pronæus, genus of insects, IX. 195.
 PRONAOS, XVIII. 640; III. 512.
 PRONOUN, XVIII. 640; X. 754, 789—relative, 757—in Egyptian grammar, XI. 422, 426—Condillac on the, VII. 235.
 Pronuba, name of Juno, XIII. 20.
 PRONY (G. C. F. M. R. de), French engineer, XVIII. 640; I. 890, *n.*—his friction dynamometer, *ib.*—on running water, XII. 73, 145—his work on logarithms, XIII. 555.
 PROOF, XVIII. 640—in jurisprudence, XIII. 275. See Evidence.
 —in printing, XVIII. 542.
 —of guns, VI. 179; XI. 97; XX. 214.
 Proof-houses, XI. 97.
 Propagation of plants, V. 167; XI. 693, 702—of the pine-apple, 732—of trees and shrubs, XVII. 767.
 Proper motion of stars, I. 845.
 PROPERTIUS (Sextus Aurelius), XVIII. 640—poetry of, XVIII. 105.
 PROPERTY, XVIII. 641—necessity of existence of, VIII. 376—real property in England and Wales, 718, 754—laws regarding real and personal, 782, 783—a basis of law, XIII. 256—injurious to, XIV. 427—should private property at sea be exempt from attack during war? XVI. 158—effects of security to, XVIII. 227—utility of a right of, 228—its effect on the progress of population, 345—right of, 357.
 —(Literary.) See Copyright.
 Property-tax, V. 600; XXI. 53, 56—unfair and unjust, 56.
 PROPHECY, XVIII. 641—various ways of fulfilment of, II. 79.
 Prophetic office of Christ, XXI. 215.
 Prophets, Druidical, VIII. 189—division by the Jews of the Old Testament prophets into classes, IV. 694—indications of a future state in the books of the Old Testament prophets, I. 474—Mohammed as a prophet, XV. 302.
 Propolis of bees, IV. 576.
 PROPONTIS, XVIII. 641; XIV. 311.
 PROPORTION, XVIII. 641—in algebra, II. 500—in arithmetic, *ib.*; III. 591, 592—geometry, II. 501; X. 516—proportions of figures, 519—problems respecting, 528. See Progression.
 —harmonical or musical, XVIII. 641.
 Proportionals, X. 517—proportional compasses, VII. 221.
 PROPOSITION, in geometry, XVIII. 641;

PRO—PRO

- X. 508, 547—in logic, XIII. 573, 574—doctrine of, 583—affirmative and negative, 583—propositions of constitution, 587—interpretation of, ib.; 589—conjunctive, 629, 630—hypothetical, 590, 629, 630, 631—disjunctive, ib.—exclusive, 590.
- Propætor, XIX. 315.
- Proprietary insurance companies, XII. 408.
- Propriety, VII. 248.
- Propterus, genus of fossil fishes, XII. 335.
- Propulsion, in mechanics, XIV. 413.
- Propylæum, III. 462, 512—propylæa in ancient Athens, IV. 165, 167, n. 1.
- Propylon, III. 512.
- Proscenium, in architecture, III. 512—in the Greek theatres, VIII. 135.
- Proscopia, genus of insects, IX. 158.
- PROSE, XVIII. 641; XIX. 105—romance, XIX. 262—principles of prose style, 140—Milton's, XV. 29.
- Proselytes, I. 488, and n.
- Prosenchyma, tissue in plants, V. 66.
- PROSERPINE, XVIII. 641; VI. 387; VIII. 630—a planet, IV. 91.
- PROSLAMBANOMENOS, XVIII. 641.
- PROSODY, XVIII. 642; X. 744.
- Prosopite, mineral, XV. 93.
- Prosoponiscus, genus of fossils, XVII. 102.
- PROSOPOPCEIA, XVIII. 642; XVII. 444.
- PROSSNITZ, town in Austria, XVIII. 642.
- Prostate gland, III. 70.
- Prostitutes, in the London theatres, VIII. 169.
- Prostitution, XIV. 441—among the Bazeegurs, IV. 525—in India, XI. 470—police of, XVIII. 190—connection between it and crime, ib.
- Prostomis, genus of insects, IX. 143.
- PROSTYLE, XVIII. 642; III. 512.
- PROTAGORAS, XVIII. 642; XX. 372.
- Protaster, fossil star-fish, XVII. 99.
- Proteaceæ, nat. ord. of plants, V. 204; IV. 261.
- PROTECTIONISTS, XVIII. 642—their legislation in regard to the wool trade, XXI. 910.
- Proteine, II. 382; IX. 757.
- Proteinus, genus of insects, IX. 194.
- Protomys, fossil chelonian, XVII. 153.
- PROTESTANT, XVIII. 642—French protestants, X. 268—persecution of in France, 31, 32—in Holland, XI. 562, 588—their intolerance towards the Catholics in the reign of James I., V. 387—persecution of in Mary's reign, VIII. 710—origin of the name, XIII. 735; XVIII. 822—churches in Europe, IX. 394—importance of philology to, XVII. 541—in Prussia, XVIII. 650, 658, 664—war with the Emperor of Germany, 825. See Reformation.
- Protestant Association, V. 491.
- Proteus Anguinus, XIII. 460; X. 587; XVII. 133; XIX. 14, 84—dental characters of, XVI. 430.
- , genus of animalcules, III. 200.
- , Egyptian king, XI. 389.
- Protichnites, XVII. 130, 131.
- Proto, fossil mollusks, XVII. 110.
- Protochloride of iron and tin, VIII. 317.
- PROTOGENES, Greek painter, XVIII. 642; XVII. 55, 57—his intercourse with Apelles, III. 291.
- Protogine, XV. 137.
- Protonesians, people, IX. 347.
- Protoplasm, V. 67.
- Protopteri, order of fishes, XII. 318.
- Protornis, genus of fossil birds, XVII. 155.
- Protorosaurus, fossil reptiles, XVII. 140.
- Protovirgularia, fossils, XVII. 101.
- Portoxide of iron, VI. 489—of nitrogen, 462.
- Protozoa, XVII. 92.
- PROTRACTOR, instrument, XVIII. 642.
- Proustite, mineral, XV. 122.
- Proust, aeronaut, II. 177.
- PROUT (Samuel), painter, XVIII. 642.
- (WILLIAM), physician, XVIII. 643

PRO—PRY

- his law regarding chemical combinations, VI. 442—Bridgewater Treatise, V. 364.
- Provençal language, IX. 391; XIII. 213—poetry, XVII. 108, 115—spoken in Marseille, XIV. 317.
- PROVENCE, in France, XVIII. 643; X. 277.
- PROVERB, XVIII. 643.
- PROVERBS, The Book of, XVIII. 643—targums on, XXI. 24.
- Providence, excluded from the Aristotelian system of philosophy, III. 546—extraordinary providence under which the Israelites were placed, I. 470; distinguished from ordinary providences, 471—careless use of the word *providential*, 473 and n.
- , capital of Rhode Island, XVIII. 645; XIX. 146, 147.
- PROVINCE WELLESLEY, in the Malay Peninsula, XVIII. 645.
- PROVINCIA, XVIII. 645.
- PROVINS, town of France, XVIII. 646.
- Provis (W. A.), on the flow of water in pipes, XII. 76, 136.
- Provisions, preservation of, IX. 766—consumption of, in London, XIII. 664; Paris, XVII. 284; Glasgow, X. 654—Irish provision trade, XII. 521—preserved, for the navy, XX. 24. See Dietetics, Food.
- PROVOST, XVIII. 646.
- Provostaye, on the circular polarization of heat, XVI. 683.
- Prudence, Aristotle on, III. 563, 565.
- PRUDENTIUS (A. Clemeus), poet, XVIII. 646.
- Prudhom, painter, XVII. 76.
- Prudhomme on the victims of the first French revolution, X. 92, n. 2.
- Prudhon (C. J.), his communistic schemes, VII. 213.
- Pruning, in gardening, XI. 696.
- Prunner (Leonard de), his work on insects, IX. 8.
- Prunus, genus of plants, V. 191.
- Prusias, king of Bithynia, XVII. 410.
- PRUSSIA, XVIII. 646; IX. 402—Royal Academy of Sciences, II. 64—army, III. 646—wars with Austria, IV. 303—diet at Erfurth convened by, 308—policy of Austria towards, ib.—invasion of Holland in 1787, V. 526—invasion of France in 1792, 543, 544—subsidized by Britain in 1794, 553—war with France in 1806, 601—mutability of her political power, 614—her troops at Waterloo, 618, 619—conduct of, in regard to Hanover, X. 141, 142—trade with England, VIII. 732, 733—coal in, VII. 126, 127—iron ores, XII. 541—Jews in, 783—language, XIII. 215—coins of, XV. 442, 444—births and deaths in, 623—produce of its mines, 248—monarchy, 414—education in, 816, 828—newspapers, XVI. 201—increase of population, 342—registration of births, &c., XVIII. 842—railway statistics, 787—alliance with Russia against France, XIX. 492—Savings-banks, 673—postal system, XVIII. 424—production of silk, XX. 278—conduct of, in regard to the slave trade, 323—animal magnetism, 444—proportion of suicides in, 800—weights and measures, XXI. 813—factory legislation in, 791—trades-schools of, 323—voluntary starvation of a Prussian recruit, VIII. 23—map of Prussia, XVIII. Plate.
- , province, XVIII. 676.
- Prussian blue, VI. 474—dyeing with, VIII. 319—used to colour tea-leaves, IX. 769; XXI. 87.
- , grass, XI. 742.
- Prussic-acid, VI. 474—its poisonous properties, XIV. 437; XVIII. 127, 128, 130, 133—plants producing, V. 191. See Hydrocyanic acid.
- Pruth, river, XV. 312; XVII. 647; XIX. 515—treaty of the, XIX. 481.
- Pryme (Abraham de la), his account of Sir Isaac Newton, XVI. 206, n. 2.
- Prymnothous, genus of fishes, XII. 232.

PRY—PSY

- PRYNNE (William), XVIII. 676; V. 394—prosecution of, IV. 713—Hume's injustice to, ib.—on the drama, VIII. 145—his opposition to the stage, XXI. 169.
- PRYTANES, XVIII. 677—of Athens, IV. 215.
- Prytaneum, in ancient Athens, IV. 163.
- PRZEMYSŁ, town in Austria, XVIII. 677.
- PRZIBRAM, town in Bohemia, XVIII. 677.
- PSALMANAZAR (George), XVIII. 677.
- PSALMODY, XVIII. 678.
- PSALMS, the Book of, XVIII. 678—of David, 97—Horne's Commentary on, XI. 631—targums on, XXI. 24.
- Psalter, Fust and Schoeffer's, XVIII. 529—the Mentz psalter, 530—Roman and Gallican, IV. 701—of the Virgin, V. 5.
- Psammetius, XI. 389.
- Psammenitus, ancient Egyptian king, VIII. 465.
- PSAMMIS, Egyptian king, VIII. 464; XI. 389.
- PSAMMITICHUS, kings of Egypt, XVIII. 680; VIII. 464.
- Psammobia, genus of mollusks, XV. 350, 341, 347.
- Psammobius, genus of insects, IX. 120.
- Psammodus, genus of fossil fishes, XII. 340.
- Psammococcus, genus of insects, IX. 147.
- Psammolepis, genus of fossil fishes, XII. 337.
- Psammopereia, genus of fishes, XII. 275.
- Psammophis, genus of serpents, XIX. 57.
- PSAMMOSTEUS, genus of fossil fishes, XII. 337; XVII. 125.
- Psaris, genus of birds, XVI. 748.
- Psarus, genus of insects, IX. 238.
- Pselaphii, family of insects, IX. 152.
- Pselaphus, genus of insects, IX. 153.
- PSELLUS (M. Constantinus), XVIII. 680—on demons, III. 309, n.
- Psen, genus of insects, IX. 196.
- Psenes, genus of fishes, XII. 298.
- Psetus, genus of fishes, XII. 301, 302.
- PSEUDO, XVIII. 680.
- Pseudobdella, genus of annelides, XI. 306.
- Pseudo-bombyces, section of insects, IX. 214.
- Pseudoblennius, genus of fishes, XII. 309.
- Pseudochromidae, family of fishes, XII. 288.
- Pseudochromis, genus of fishes, XII. 288.
- Pseudocrinus, fossil echinoderms, XVII. 98, 99.
- Pseudodiptera, in architecture, III. 512.
- Pseudo-Jonathan on the Pentateuch, XXI. 23.
- Pseudoliva, fossil mollusks, XVII. 110.
- Pseudomorphism, in crystals, XV. 54.
- PSEUDONYMUS, XVIII. 680.
- Books, IV. 711.
- Pseudo-periptera, III. 512.
- Pseudo-prostyle, III. 512.
- Pseudopus, genus of serpents, XIX. 41.
- Psila, genus of insects, IX. 252.
- Psilomelane, mineral, XV. 111.
- Psilopus, genus of insects, IX. 243.
- Psilota, genus of insects, IX. 240.
- Psittacara, genus of birds, XVI. 780.
- Psittaculus, genus of birds, XVI. 783.
- Psittacus, genus of birds, XVI. 780, 783.
- PSKOV, in Russia, XVIII. 680, XIX. 521.
- Psoa, genus of insects, IX. 142.
- Psochus, genus of insects, IX. 180.
- Psolus, fossil holothurioides, XVII. 100.
- Psophia, genus of birds, XVI. 798.
- Psolidæ, echinoderms, XXI. 986.
- PSYCHE, XVIII. 681—planet, IV. 91.
- Psychoda, genus of insects, IX. 226.
- PSYCHOLOGY, XVIII. 681; XIV. 555, 556—the real in, 616—relation between it and logic, XIII. 567—phrenological, XVII. 561—psychological arrangement of phrenology, ib.
- medicine, XIV. 463—Pythagoras' psychological notions, XVIII. 711—psychological proof of the existence of God, XXI. 187.
- Psylla, genus of insects, IX. 170.
- Psylli, XIX. 45, 65.

PSY—PUB

- Psyra, island, laid waste in 1824, XI. 28.
- Ptah, Egyptian deity, VIII. 437.
- Ptarmigans, birds, XVI. 791; IX. 762—shooting of, XX. 226.
- Pteraclis, genus of fishes, XII. 298.
- Pterichthys, genus of fossil fishes, XII. 338; XVII. 129; XIX. 453.
- Pterinea, fossil mollusks, XVII. 106.
- Pterocera, mollusks, XV. 388—fossil, XVII. 109.
- Pterochile, genus of insects, IX. 197.
- Pterocles, genus of birds, XVI. 791.
- Pterodactylus, III. 88; XVII. 151, 640.
- Pteroglossus, genus of birds, XVI. 779.
- Pterois, genus of fishes, XII. 283.
- Pteromys, genus of mammalia, XIV. 178.
- Pteroperna, fossil mollusks, XVII. 106.
- Pterophorites, section of insects, IX. 219.
- Pterophorus, genus of insects, IX. 219.
- Pteropoda, genus of fishes, XII. 328.
- Pteroplatea, mollusks, XV. 357, 332—fossil, XVII. 111.
- Pteropus, genus of mammalia, XIV. 147—dentition of, XVI. 452.
- Pterosauria, fossil reptiles, XVII. 151, 154.
- Pterotheca, fossil mollusks, XVII. 111.
- Pterygocephalus, genus of fossil fishes, XII. 344.
- Pterygotus, fossils, XVII. 101, 102.
- Ptilinus, genus of insects, IX. 111.
- Ptilodictya, fossil animals, XVII. 96, 98.
- Ptilopora, fossil animals, XVII. 96, 98.
- Ptiniore, tribe of insects, IX. 111.
- Ptinus, genus of insects, IX. 111.
- PTOLEMÆUS (Claudius), ancient astronomer, XVIII. 681—his improvements in arithmetic, I. 702—his astronomical tables corrected by Alphonso, king of Castile, 600—his astronomy, 198, 199; III. 792; IV. 53, 79, 80; its overthrow, III. 797—Arabian translation of his works, 794—on refraction, IV. 9—climates, VI. 766, 767—his system of geography, X. 466—on geometry, 501—his reference to Ireland, XII. 792—on optics, XVI. 521; XIII. 449; I. 620—on the boundaries of Syria, XX. 901.
- PTOLEMIES (The), XVIII. 681—hieroglyphical symbols of the name, XI. 390, and n. 6.
- Ptolemy Soter, king of Egypt, VIII. 468—science encouraged by, II. 751; III. 789; X. 500; XIV. 452.
- II. Philadelphus, VIII. 468—his love of science, II. 751; III. 789; X. 500; XIV. 452—Alexandria embellished by, II. 469.
- III., Euergetes, VIII. 468—his visit to Jerusalem, XII. 732.
- IV., Philopator, VIII. 469—his visit to Jerusalem, XII. 732.
- V., Epiphanes, VIII. 469.
- VI., Philometor, VIII. 469.
- VII., Physcon, VIII. 469, 470—his cruelties at Alexandria, II. 470.
- VIII., Lathyrus, VIII. 470.
- IX. Alexander I., VIII. 470.
- X., Alexander II., VIII. 470.
- XI., Auletes, VIII. 470, 471.
- XII., VIII. 471.
- XIII., VIII. 471.
- Ptyacanthus, genus of fossil fishes, XVII. 117.
- Ptychacanthus, genus of fossil fishes, XII. 339.
- Ptychoceras, fossil mollusks, XVII. 530.
- Ptychodus, genus of fossil fishes, XII. 340.
- Ptycholepis, genus of fossil fishes, XII. 335.
- Ptychoptera, genus of insects, IX. 227.
- Ptyodactyli, reptiles, XIX. 36.
- Puberty, XIV. 425; XVII. 683.
- Pubis (os), III. 12.
- PUBLICOLA (Publius Valerius), XVIII. 681.
- Public works, employment of convicts at, XVIII. 583—in the United States, XXI. 431.
- Pubilian laws, XIX. 304.
- Publishers, value set on dramatic pieces by, XXI. 172.
- Publishing of books, VII. 356.

PUB—PUM

- PUBLIUS (Syrus), an ancient writer of farces, XVIII. 681.
 Puce-colour, dyeing of, VIII. 313.
 PUCHBUDRA, town in India, XVIII. 681.
 Puddingstone, XV. 141.
 Puddling, in iron manufacture, XII. 553—of canals, XVI. 57.
 PUEBLA, in Mexico, XVIII. 681; XIV. 724, 718—Indians of, IX. 347.
 —DE DON FADRIQUE, town in Spain, XVIII. 681.
 —DE MONTALVAN, town in Spain, XVIII. 681.
 PUENTE GENIL, town in Spain, XVIII. 681.
 Puerperal mania, XIV. 530.
 Puerto-bello, taken by Admiral Vernon, V. 458.
 —CABELLO, in Venezuela, XVIII. 682; IV. 817, 819; XI. 612.
 —d'Espana, in Trinidad, XVIII. 375.
 —DE-SANTA-MARIA, town in Spain, XVIII. 681.
 —LLANO, town in Spain, XVIII. 682.
 —PRINCIPE, town in Cuba, XVIII. 682.
 —La Mar, IV. 827.
 —Plata, XI. 254.
 Puff-ball, its soporific qualities, VI. 629.
 Puff-birds, XVI. 779.
 PUFFENDORF (Samuel), jurist and historian, XVIII. 682; I. 88, n.
 Puffins, birds, XVI. 810; IX. 762—Manx puffin, XIV. 243.
 Puffinus, genus of birds, XVI. 812.
 Pugatschef, VI. 336.
 PUGET (Pierre), XVIII. 682.
 PUGHE (Wm. Owen), XVIII. 683.
 PUGIN (Augustus), architect, XVIII. 683.
 —(A. WELBY NORTHMORE), XVIII. 683—his specimens of pointed architecture, III. 457; principles of, 490—his design for a Romish church, 506.
 Puglia, in the kingdom of Naples, XX. 237.
 PUGNANI (Gaetano), violinist, XVIII. 683.
 Pugnet (M.) on the plague, XVII. 748 *et seq.*
 Puharrees, XI. 467.
 Puiseaux, blind man of, IV. 780.
 Pul, III. 778.
 PULCI (Luigi), poet, XVIII. 684; VIII. 250—poetry of, XVIII. 110.
 Pulein (Robert), XXI. 452.
 Pulex, genus of insects, IX. 260.
 PULGAR (Fernando del), historian, XVIII. 684.
 Pulkowa, observatory at, I. 861; III. 820.
 Pullicat handkerchiefs, manufacture of, VII. 449—folding of, VI. 93.
 Pulmonata, order of mollusks, XV. 373.
 Pulmonifera, fossil mollusks, XV. 403; XVII. 108, 111.
 Pulo Way, or Ay, island, IV. 409—P. Rondo, *ib.*—P. Pisang, *ib.*
 PULPIT, XVIII. 684.
 Pulque, Mexican beverage, V. 318; XIV. 717.
 PULSE, XVIII. 684; XVII. 661—effects of electricity on, VIII. 602—of the horse, XXI. 551, n. 5.
 —, leguminous plants, V. 190.
 —, glass, XX. 556.
 Pultava, XVIII. 263—battle of, XIX. 480; XX. 854.
 PULTENEY (William), Earl of Bath, XVIII. 684.
 —(Sir William), XXI. 145.
 Pulteneytown, XXI. 857.
 PULTUSK, Russian town, XVIII. 685.
 Pulvinated, in architecture, III. 512.
 Pulvinites, fossil mollusks, XVII. 106.
 Puma, XIV. 170; II. 713; VI. 549; XVII. 630, 633.
 Pumice-stone, XV. 72, 132—its resistance to pressure, XX. 718.
 Pumiced-foot, XXI. 561.
 PUMP, XVIII. 685, 24, 49; XII. 174, *et seq.*—Galileo's observation on, IV. 449—Bramah's, V. 273, 274—for collieries, VII. 120. See Air-pump.
 Pump-areometer, III. 392.
 Pumping-engines, XX. 611.

PUM—PUS

- PUMPKIN, XVIII. 685; V. 193.
 PUN, XVIII. 685.
 PUNCH, XVIII. 685.
 —, in the drama, origin of, VIII. 148.
 —, Suffolk, breed of horses, II. 338; XX. 790.
 PUNCTUATION, XVIII. 685—in shorthand writing, XX. 679. See Comma, Semicolon, etc.
 PUNDERPOOR, town in India, XVIII. 686.
 Punic language, XIII. 209.
 —wars, VI. 286 *et seq.*—first, XIX. 309—second, 310.
 PUNISHMENTS, XVIII. 686; VII. 506; XIV. 445—Beccaria on, IV. 556—of heresy, VII. 483—doctrine of, XIII. 275—the principle on which acts are to be selected for, 276—primary and secondary qualities of, 277—capital and other punishments in United Kingdom, VIII. 750—in the navy, XVI. 104, 107—temporal, under the Mosaic dispensation, I. 470, 471, 472, 473, 478—of suicide, XX. 801—forgery, IX. 784. See Crime, Law, Prison Discipline.
 —(future), described in the popular mythology of the Greeks and Romans, I. 459—not revealed in Old Testament, 473, 477—not one of the sanctions of the Mosaic law, 479; but one of the sanctions of the New Testament dispensation, 481. See Future Life.
 PUNJAB, XVIII. 687—its rivers, XVII. 606—sepoj insurrection in, XVI. 308, 309—annexed to the British possessions, V. 670; XI. 509.
 Punjnad, river, XII. 378.
 PUNNAH, town in India, XVIII. 695.
 PUNO, in Peru, XVIII. 695; XVII. 474.
 Punt, IV. 800.
 Punt-shooting, XX. 217.
 Pupa, genus of mollusks, XV. 373.
 —, of insects, IX. 53.
 Pupil of the eye, XIII. 461; XVII. 678—its contractions, III. 44—in various animals, 97.
 Pupivora, family of insects, IX. 184.
 PURBACH (George), XVIII. 695—his astronomical labours, I. 600; III. 796—his division of the radius, 578—mathematical investigations of, X. 504.
 PURBECK, XVIII. 695—quarries, VIII. 111—beds, XV. 208—fossil insects of, XVII. 103; mammals, 161.
 PURCELL (Henry), musician, XVIII. 695.
 PURCHAS (Samuel), XVIII. 695.
 Purfleet powder magazine, VI. 351.
 Purgatives for domestic animals, XXI. 556, n. 1.
 PURGATORY, XVIII. 695, 336.
 PURITANS, XVIII. 696; XII. 368; VIII. 712—under James I., V. 382—their hostility to the stage, VIII. 160; XXI. 169—of New England, XXI. 432. See Nonconformists.
 Purkinje on the cylinder axis, II. 810—on the structure of the teeth, XVI. 407, 409—on the effect of galvanism on the eye, XXI. 634.
 Purlins, XIX. 387—best manner of framing, VI. 259.
 Purmann, German surgeon, XX. 818.
 PURNEAH, in Bengal, XVIII. 696.
 Purple, dyeing of, VIII. 311, 319—Tyrian, 272, 273; XXI. 406—for printing with, XVIII. 556.
 Purpura, genus of mollusks, XV. 366—dye from, VIII. 272.
 Purpure, in heraldry, XI. 324.
 Purpurina, fossil mollusks, XVII. 109.
 Purre, bird, XVI. 803.
 PURSER, or Paymaster (Ships), XVIII. 696; XVI. 105, 110, 114, 115.
 Purslane, plant, XI. 745—order of plants, V. 193.
 Purveyance, levying of, II. 253, 254.
 Pus, in medicine, XVII. 652—pus-cells, 650.
 Puschkinite, mineral, XV. 85.
 Pusey (Mr.), on carts, II. 279—on portable thrashing machines, 281—on the agricultural implements of the Great Exhibition, 285—on irrigation, XII. 619.

PUS—PYR

- PUSHKIN (A. Sergejewitch), Russian poet, XVIII. 696.
 Putamen, in botany, V. 135.
 PUTEOLI, XVIII. 697.
 PUTIVL, Russian town, XVIII. 697.
 PUTNEY, in Surrey, XVIII. 697.
 PUTREFACTION, XVIII. 697; IX. 766—substances which resist, III. 277; IX. 767—influence of electricity on, VIII. 597.
 PUTTEE, town in India, XVIII. 697.
 PUTTEALA, town in India, XVIII. 697.
 Putting, game, XI. 170.
 PUTTUN, town in India, XVIII. 697.
 PUTTY, XVIII. 697; V. 756; X. 669, 670.
 PUY (Le), town in France, XVIII. 697.
 PUY-DE-DOME, in France, XVIII. 697.
 PUYLAURENS, town in France, XVIII. 698.
 Puysegur (Marquis de), XX. 413—magnetic somnambulism discovered by, 421 *et seq.*
 —(Count Maxime de), mesmerist, XX. 423.
 PUZZUOLI, XVIII. 698, 697.
 Pwllheli, in Wales, XVIII. 698; VI. 55.
 Pycnite, mineral, XV. 88.
 Pycnodontei, family of fossil fishes, XII. 337, 350; XVII. 125, 126.
 Pycnodus, genus of fossil fishes, XII. 337; XVII. 126.
 Pycnogonum, genus of Arachnides, III. 386.
 PYCNOSTYLE, XVIII. 698; III. 512.
 Pydna, XIII. 763—battle of, XIX. 314; XI. 12.
 Pygeus, genus of fossil fishes, XII. 345.
 Pygaster, fossil echidnoidea, XVII. 99, 100.
 PYGMALION, XVIII. 698; VI. 280.
 Pygocentrus, genus of fishes, XII. 247.
 Pygoprictis, genus of fishes, XII. 247.
 Pygopterus, genus of fossil fishes, XII. 335; XVII. 125.
 PYLADES, XVIII. 698; XVI. 708.
 —, dancer, XVIII. 698; IV. 398.
 Pyloric appendages, in fishes, III. 111.
 PYLUS, or Pylos, ancient town of Messina, XVIII. 698; IV. 205; XV. 831.
 PYM (John), XVIII. 699; V. 387, 400, 401.
 PYNAKER (Adam), landscape painter, XVIII. 700.
 Pynson (Richard), printer, XVIII. 537.
 Pyralis, genus of insects, IX. 216.
 Pyraliolite, mineral, XV. 82.
 Pyramid, in geometry, X. 335—how to develope, XII. 807—mensuration of, XIV. 507—in mineralogy, XV. 41 *et seq.*
 PYRAMIDS of Egypt, XVIII. 700; III. 436, 437, 451, 457; VIII. 454, 455, 500, 501—attempt to pull them down, II. 23—battle of, VIII. 488—probably intended for gnomons, X. 464.
 —of Mexico, XIV. 719.
 —octagonal, construction of, III. 410.
 Pyramidal bodies of the brain, III. 55.
 Pyramidellidæ, family of mollusks, XV. 383.
 Pyranga, genus of birds, XVI. 751.
 Pyragillite, mineral, XV. 89.
 Pyratyrite, mineral, XV. 121.
 PYRENEES, mountains, XVIII. 700; III. 393; IX. 382; XVII. 595; XX. 486—climate, 488—carriage roads over, III. 393—botany of, V. 227—height of the, XVII. 642—campaign of the, XXI. 826.
 —BASSES, a department of France, XVIII. 701; X. 242.
 —HAUTES, XVIII. 701; X. 242.
 —ORIENTALES, XVIII. 702; X. 242.
 Pyreneite, mineral, XV. 85.
 Pyrgita, genus of birds, XVI. 760.
 Pyrgos, aqueduct of, III. 334.
 Pyrina, fossil echinoidea, XVII. 100.
 PYRITES, XVIII. 702; XV. 114, 115—iron, VI. 490; crystallization of, VII. 557—copper, VI. 496—tin, XV. 121—gold in, VI. 499—sulphur from, XV. 246—in Devonshire, VII. 763.
 Pyritonema, fossils, XVII. 96.
 PYRITZ, town in Prussia, XVIII. 702.

PYR—QUA

- Pyrmont, mineral waters of, XV. 38.
 Pyrochlore, mineral, XV. 91.
 Pyrochroa, genus of insects, IX. 133.
 Pyrochroides, tribe of insects, IX. 133.
 Pyrodon, genus of fishes, XII. 313.
 Pyro-electricity, VIII. 529, 557.
 Pyro-gallic acid, VIII. 281.
 Pyrolaceæ, nat. ord. of plants, V. 198.
 Pyroligneous acid, its power of preserving animal food, IX. 767.
 Pyrolusite, mineral, XV. 111.
 Pyromancy, VIII. 54.
 Pyromania, XIV. 532.
 PYROMETER, XVIII. 702—invention of, I. 762—Brongniarts', XVIII. 444.
 Pyromorphite, mineral, XV. 105.
 Pyrope, XV. 98—in Fifeshire, IX. 544.
 Pyrophorus, XIV. 351.
 Pyrophyllite, mineral, XV. 79.
 Pyrophysalite, mineral, XV. 88.
 Pyrosclerite, mineral, XV. 80.
 Pyroscope, VI. 783; I. 769.
 Pyrosmalite, mineral, XV. 79.
 Pyrosoma, mollusks, XV. 334—their luminosity, *ib.*; XVII. 574.
 Pyrosomidæ, family of mollusks, XV. 334.
 PYROTECHNY, XVIII. 706—school of, in Belgium, IV. 622.
 Pyrothite, mineral, XV. 90.
 Pyroxene, mineral, XV. 81.
 PYRRHICA, or Pyrrhic dance, XVIII. 708; VII. 495, 645.
 Pyrrhite, mineral, XV. 91.
 PYRRHO, sceptic, XVIII. 708; XIX. 707.
 Pyrrhocorax, genus of birds, XVI. 754.
 Pyrrhosiderite, mineral, XV. 108.
 Pyrrhotine, mineral, XV. 115.
 Pyrrhula, genus of birds, XVI. 761.
 Pyrrhulina, genus of fishes, XII. 251.
 PYRRHUS, king of Epirus, XVIII. 708—his war with the Romans, XIX. 305—death of, 306—his conduct in Sicily, XX. 900.
 Pyrula, genus of mollusks, XV. 387—fossil, XVII. 110.
 Pyrus, genus of trees, XVII. 763.
 PYTHAGORAS, XVIII. 709; X. 497; XIV. 451; XX. 810—philosophy of, III. 538; XVII. 231—on the mystical properties of numbers, III. 575; XVII. 232, and n.—astronomy, III. 788—abstinence from beans enjoined by, IV. 527—many of his doctrines derived from India, V. 271—his residence at Crotona, VII. 521—resemblance between his philosophy and that of the Druids, VIII. 185—his esoteric and exoteric scholars, IX. 332—doctrine of the metempsychosis, XIV. 628—treatment of mental diseases, 527—on vision, XIII. 449; XVI. 521—Philolaus on the doctrines of, XVII. 516—school of, XVII. 787, 789.
 —, sculptor, XIX. 854.
 Pythagoreans, their Societies, XVIII. 712—mathematical theory of the universe, XVII. 800.
 PYTHEAS, ancient navigator, XVIII. 712, 161, n. 2—on astronomy, III. 789—his voyages, *ib.*; X. 462.
 PYTHIA, XVIII. 712; VII. 709; XVI. 698.
 PYTHIAN GAMES, XVIII. 712; X. 397.
 Pythias, VII. 642.
 Pythina, fossil mollusks, XVII. 107.
 Pytho, genus of insects, IX. 132.
 Python, fabled serpent destroyed by Apollo, III. 299.
 —in zoology, XVII. 634; II. 744; IX. 62, 60.
 Pythoness, priestess of Apollo, VII. 709. See Pythia.
 Pyx, trial of the, XVIII. 812; III. 766, 767—process of pyxing, VII. 94.
 Pyxidium, in botany, V. 136.

Q

- Q, letter of the alphabet, XVIII. 713—in abbreviations, II. 20.
 Quabenus (Zacharias), his burning mirrors, VI. 11.
 Quack doctors, XIV. 464, 465.

QUA—QUA

QUADI, XVIII. 713; VII. 306—marvellous story of a Roman victory over the, III. 280.
 QUADRANGLE, XVIII. 713.
 Quadrans, Roman coin, VII. 67.
 QUADRANT, XVIII. 713; X. 485, 513—Davis', IV. 351—mural, 153; XV. 688—Hadley's, I. 748; XVI. 30—telescopes applied to quadrants, III. 802—causes of error in the use of, XVI. 32.
 QUADRANTAL, XVIII. 713.
 QUADRATIC EQUATIONS, XVIII. 713; II. 510.
 Quadratrix, XX. 521.
 QUADRATURE, XVIII. 713—of the circle, I. 699, 700; X. 530; XX. 520—in astronomy, XVIII. 713.
 Quadratus, apologist in the primitive church, IX. 491.
 QUADRIGA, XVIII. 713.
 Quadrilatera, family of crustacea, VII. 541.
 Quadrilateral figure, to find the area of, XIV. 504—bone in birds, III. 85.
 Quadrimani, section of insects, IX. 88.
 QUADRIO (F. Xaverio), XVIII. 713.
 Quadroon, XIV. 719.
 Quadrumana, in zoology, XIV. 135, 136; II. 774; XVII. 631—of America, II. 712—their bones, III. 75 *et seq.*—muscles, 91—teeth, 105; XVI. 455 *et seq.*—stomach, III. 108.
 Quadrupeds, characters of, II. 773—kinds used as food, IX. 761. See Mammalia.
 QUADRUPLE, XVIII. 714.
 —Alliance, V. 455.
 QUÆSTOR, XVIII. 714.
 Quagga, XIV. 201.
 QUAIL, XVIII. 714; XVI. 797; VIII. 433; IX. 762—of Scripture, XVII. 192—fighting with, VII. 51.
 QUAINI (Luigi), painter, XVIII. 714.
 Quain (Richard), his works on anatomy, II. 767, 770—on fatty degeneration, XVII. 696.
 —(Jones), his work on anatomy, II. 770; III. 74.
 QUAKERS, XVIII. 714—their affirmation equal in law to an oath, II. 200; XVI. 399—their address to James II., V. 434—their opposition to slavery and the slave trade, 527; XX. 321—registration of their marriages, XVIII. 834—Barclay's Apology for, IV. 442—places of worship in Scotland, XIX. 801. See Barclay (Robert), Fox (Geo.), Penn (William).
 QUANG-SI, in China, XVIII. 724.
 QUANG-TON, in China, XVIII. 724.
 Quäns, Lapland race, XIII. 237.
 QUANTITY, in prosody, XVIII. 724—in algebra, II. 489 *et seq.*—the idea of quantities infinitely great and small first introduced into Geometry by Kepler, I. 554—in logic, XIII. 569.
 Quantock hills, XX. 410.
 QUARANTINE, XVIII. 724—establishments, XIV. 445—laws, XVII. 749, 751.
 QUARLES (Francis), XVIII. 724—his poetry, 122.
 Quarndon, chalybeate spring, near Derby, VII. 755.
 QUARRY, stone, XVIII. 725—English quarries, VIII. 726—French, X. 251. See Blasting.
 —hunting phrase, XVIII. 725—in falconry, ib.; XI. 249.
 Quarrymen, diseases of, XIV. 442.
 QUART, measure, XVIII. 725.
 QUARTATION, XVIII. 725.
 QUARTER, XVIII. 725—quarters of a horse, ib.—in astronomy, ib.—in heraldry, ib.; XI. 329—of a ship, ib.
 QUARTER-MASTER, XVIII. 725.
 QUARTER-MASTER-GENERAL, XVIII. 725; III. 664; XXI. 702.
 Quarter clocks, VII. 17.
 QUARTERING, in heraldry, XVIII. 725; XI. 325, 339, 340.
 Quarterly Review, XIX. 100—establishment of, 821—on languages, XIII. 197—on the character of Horne Tooke, XXI. 309—Gifford's editorship of, X.

QUA—QUE

622; Lockhart's, XI. 549—Isaac d'Israeli's contributions to, XII. 631.
 QUARTETTO, in music, XVIII. 725; XV. 742.
 Quartz, XV. 68—common, ferruginous, and spongy, 69—optical phenomena of, I. 910; XVI. 538, 600, 627, 652, 677—specific gravity of, XII. 88.
 —rock, or Quartzite, XV. 153—in Scotland, XIX. 792, 793.
 Quasdanovich (General), XV. 787.
 Quassia, order of plants, V. 189.
 Quaternions, in geometry, I. 918, n. 3.
 QUATRE-BRAS, XVIII. 725—battle of, IV. 597; V. 619.
 Quatrefages (M.), on mollusks, XV. 357—on the value of alpaca wool, XXI. 906.
 Quatre-foil, in heraldry, III. 512; XI. 326.
 QUATREMERE-DE-QUINCY (A. C.), XVIII. 725—his work on the Olympian Jupiter, XIX. 855.
 QUATUORVIR, XVIII. 725.
 QUAYER, in music, XVIII. 725.
 Quays, on tidal rivers, XVI. 79.
 QUEBEC, XVIII. 725—climate, II. 673, 674—taken by General Wolfe, V. 464; VI. 133; XXI. 434—population, VI. 144—trade of, 148.
 QUESADA, XVIII. 726.
 QUESLINBURG, town in Prussia, XVIII. 727.
 —beet, XX. 796.
 QUEEN, XVIII. 727—Queen-dowager, VIII. 121.
 QUEEN ANNE'S BOUNTY, XVIII. 727.
 Queen-bee, IV. 571, 580.
 QUEEN-CHARLOTTE-ISLANDS, in Australia, XVIII. 727; IV. 265.
 Queen Charlotte's Sound, in New Zealand, XVI. 234, 235.
 QUEEN'S COLLEGES, XVIII. 727; VIII. 223; XII. 532; XXI. 489.
 —COUNTY, XVIII. 727; XII. 508, 509, 515, 517.
 —University, in Ireland, VIII. 223; XII. 532; XXI. 489.
 —ware, XVIII. 434.
 QUEENSFERRY, South, XVIII. 730—North, IX. 795—ferry at, 797.
 QUEENSTOWN, in Cork, XVIII. 730; VII. 371.
 Quekett (Mr), his list of test objects, XIV. 804.
 QUELPAERT, island, XVIII. 730.
 Quenstedt, his definition of theology, XXI. 181—on the divine attributes, 189.
 QUENTIN (St), in France, XVIII. 730—cotton manufactures of, X. 253—canal of, 244.
 Querard (M.), his list of Laplace's works, XIII. 232.
 Quercitrin, VIII. 296.
 Quercitron-bark, yellow dye-stuff, IV. 445; VIII. 296, 318—for wool, 297.
 QUERETARO, in Mexico, XVIII. 730; XIV. 718, 723—proportion of baptisms and burials in, XVIII. 342.
 QUERINI (Angelo Maria), cardinal, XVIII. 730.
 Querquedula, genus of birds, XVI. 819.
 Querula, genus of birds, XVI. 750.
 QUESADA, town in Spain, XVIII. 731.
 QUESALTENANGO, in Guatemala, XVIII. 731; XI. 76, 77.
 QUESNAY (François), XVIII. 731; VIII. 375—on the vibration of the nerves, I. 171 n.—on political economy, XVIII. 220, 221—his intimacy with Adam Smith, XX. 340—on the incidence of taxes, XXI. 40.
 QUESNE (Abraham), Marquis de, admiral, XVIII. 734—his expedition against Algiers, II. 571.
 —(Fort du), V. 463.
 Quesnel, his moral observations on the New Testament, XII. 686.
 Quesnoy (Francisco di), sculptor, XIX. 864.
 Quetelet (M.), on the electricity of clouds, VIII. 581—on magnetism, XIV. 14, 66

QUE—QUO

—on the population of the Netherlands, XV. 620, 634, 644—on the time of flowering in plants, XVII. 625—on the proportion of suicides in different countries, XX. 800—on temperature, XVII. 625.
 QUEUE, in heraldry, XVIII. 734.
 QUEVEDO Y VILLEGAS (F. Gomez de), XVIII. 734—poetry of, 115—his romance, XIX. 286.
 Quezal, bird, XVI. 779.
 Quiberon, British expedition to, X. 97—peninsula of, XV. 577.
 Quichua language, II. 689; XIII. 223.
 Quichuas, IX. 348.
 Quick-lime, as a deodorizer, XIX. 621.
 Quicksilver. See Mercury.
 QUID-PRO-QUO, XVIII. 735.
 QUIETISM, XVIII. 735; XV. 757.
 QUILMANE, or Kilimane, XVIII. 735; XV. 669.
 QUILLET (Claude), XVIII. 735.
 QUILLOTA, town in Chili, XVIII. 735—department of, VI. 547.
 QUILOA, town in Zaquebar, XVIII. 735.
 QUILON, town in India, XVIII. 735.
 QUIMPER, town in France, XVIII. 735.
 QUIMPERLE, town in France, XVIII. 735.
 QUIN (James), tragedian, XVIII. 735; XXI. 175—his friendship to Thomson, 234.
 —(Dr), his imitation of ancient gems, XXI. 33.
 QUINARIUS, coin, XVIII. 736; XVI. 383.
 Quinatzin, Mexican king, XIV. 699.
 QUINAULT (Philippe), poet, XVIII. 736.
 Quince, V. 191—culture of, XI. 716.
 Quince-trees, XVII. 764.
 Quincey (Mr de), Life of Pope in this work by, XVIII. 320, n. 1.
 QUINCUNX, in gardening, XVIII. 736.
 QUINCY, town in Massachusetts, XVIII. 736.
 —town in Illinois, XVIII. 736.
 QUINDECAGON, XVIII. 736.
 QUINDECENVIRI, XVIII. 736; VII. 690.
 Quindiu, one of the Andes, III. 131—pass of, II. 668.
 Quinet, on Paulus' theory respecting miracles, XV. 263, n. 1.
 QUININE, XVIII. 736; V. 196; VI. 518, 725—as a remedy for ague, XII. 436.
 QUINQUATRUS, or Quinquatria, festival, XVIII. 736.
 QUINQUEREMIS, XVIII. 736.
 Quinquina tree, Condamine's account of, VII. 230.
 QUINQUIVIRI, XVIII. 736.
 QUINTANA (M. Joseph), Spanish poet, XVIII. 736—on Moorish ballads, 113.
 QUINTANAR DE LA ORDEN, town in Spain, XVIII. 737.
 QUINTETTO, in music, XVIII. 737.
 QUINTILIANUS (M. Fabius), XVIII. 737—Capperonier's edition of, V. 787; Burman's edition, ib.; Rollin's, XIX. 251—Spalding's, XX. 495—on painting, XVII. 51, 81—on ancient sculpture, XIX. 850.
 QUINTUS SMYRNAEUS, or Q. Calaber, Greek poet, XVIII. 738.
 Quipu, a substitute for writing among the Peruvians, XVII. 462.
 Quirinal Hill, XIX. 356, 357.
 Quirinus, I. 458.
 QUIRITES, XVIII. 738; XIX. 316—origin of the name, VII. 591.
 Quiros (Pedro Fernandez de), his voyage of discovery, IV. 252—discoveries of, 265; XVIII. 181.
 QUITO, XVIII. 738—climate, VIII. 387—elevation of its site, XVII. 593—volcanoes enclosing the plain of, ib.—height of its mountains, 645.
 Quittor, XXI. 560.
 Quiver, III. 427.
 Quixote (Don), VI. 619—Smollett's translation of, XX. 361. See Cervantes.
 Quoins, in architecture, III. 512; V. 740.
 Quorra. See Niger.
 QUORUM, XVIII. 738.
 Quoy on the mollusca, XV. 327.

R—RAD

R

R, letter of the alphabet, XVIII. 739—in abbreviations, ib.; II. 20.
 Ra, Egyptian deity, VIII. 437.
 RAAB, town in Hungary, XVIII. 739.
 RAAT, town in Bengal, XVIII. 739.
 RABATT, town in Morocco, XVIII. 739; XV. 596.
 Rabbet of the keel, in ship-building, XX. 185.
 RABBI, XVIII. 739—stipend allowed to, in France, XII. 782. See Jews.
 Rabbinical language, XIII. 209—Bible, XIX. 835.
 RABBIT, XVIII. 739; XIV. 188—rearing and management of, II. 356—as food, IX. 762—teeth of, XVI. 454, 455—skins, X. 349, 351—shooting of, XX. 223.
 Rabboth-Moab, ruins of, XVII. 189.
 RABELAIS (Dr François), XVIII. 739—his resemblance to Aristophanes, VIII. 139.
 RABENER (G. Wilhelm), satirist, XVIII. 743.
 Rabies, or canine madness, XXI. 575.
 Raby Castle, VIII. 267.
 RACCONIGI, town in Italy, XVIII. 743.
 RACE-HORSE, XVIII. 743; XI. 633, 662—speed of, VII. 230; XI. 643—action of, 642—race-riding, 686; at Newmarket, XVI. 176—duty on, XIII. 435.
 RACES OF MAN, XVIII. 743; II. 775; V. 373; XIX. 607—in Sindh, XX. 305. See Ethnology.
 —or roosts, in the sea, cause of, XI. 217.
 Raceme, in botany, V. 114.
 Rachamach, bird, XVI. 740.
 RACHEL, trédienne, XVIII. 743.
 Rachis, in botany, V. 113.
 RACINE (Jean), poet, XVIII. 743—his friendship with Boileau, IV. 814—dramatic works of, VIII. 155.
 —town in Wisconsin, XVIII. 743.
 RACING, XVIII. 746; XI. 686—betting on horse-racing, X. 395—among the Greeks, 397.
 RACK, instrument of torture, XVIII. 746.
 Rackett (Mr), on the Lymington shrimp, VII. 543.
 Racle (M.), on iron bridges, XII. 578.
 Racoma, genus of fishes, XII. 257.
 RACON, XIV. 154—teeth of, XVI. 462—its fur, X. 349.
 RACZ-KEVE, town in Hungary, XVIII. 747.
 Radama, king of Madagascar, XIII. 792.
 RADCLIFFE (Ann Ward), XVIII. 747—her romances, XIX. 276.
 —(Dr John), XVIII. 747—Radcliffe Library founded by, XVII. 35—his ludicrous method of emptying abscess in the fauces, XX. 827, n.
 —Library, XIII. 396; XVII. 35; XIX. 445.
 —(Mr), his machine for dressing cotton cloth, VII. 451.
 —Observatory, III. 817.
 RADETSKY DE RADETS (Count Joseph), field-marshal, XVIII. 747—his proceedings in Italy, XII. 656, 657, 658.
 RADHUNPOOR, in India, XVIII. 747.
 Radiant heat, I. 800, 801, 942, 952; XI. 262—law of emanation of, 944, 947—growing importance of the subject, 943—influence of colour on, 945—De la Roche on, 954—recent observations on, 955—polarisation of, 909, 956. See Leslie (Sir John).
 Radiata, IX. 60; II. 772—characteristics and classes of, III. 192—arrangement of, in zones at various depths, IX. 773—number known, XVII. 631—fossil, 95.
 Radiated polypes, XXI. 1002.
 Radiation of cold, XI. 264.
 —terrestrial, XIV. 644—fogs, 654.
 Radicals, in chemistry, VI. 502.
 Radicle, of plants, V. 76.

RAD—RAI

- Radiolite, mineral, XV. 75.
 Radiolites, fossil mollusks, XVII. 107.
 Radish, culture of the, XI. 740—horse-radish, 745.
 RADIUS, XVIII. 748—in geometry, X. 513.—bone, in man, III. 32—in the mammalia, 81—in reptiles, 88—in birds, 86.—vector, VIII. 358; X. 543.
 RADNORSHIRE, XVIII. 748—population and value of property, VIII. 754.
 RADOM, town in Poland, XVIII. 749.
 Radzivil (Prince), XVIII. 145, 150.
 Rae (Dr), fate of Sir John Franklin and his party discovered by, X. 298; XVIII. 175—his northern explorations, 169, 172, 174.
 Rde Barell, town in Oude, XVII. 17.
 RAEBURN (Sir Henry), portrait-painter, XVIII. 749.
 RAEGANJ, town in India, XVIII. 751.
 RAFFARLE (Sanzio), XVIII. 750; XVII. 57 n. 2, 62, 67—his style of architecture, III. 452; of painting, 708, 709—cartoons of, VI. 304—genius of, VIII. 171—specimen of sketches by, VIII. Plate—Vaga generally reckoned his best pupil, XXI. 503.—ware, XVIII. 432.
 RAFFLES (Sir T. Stamford), XVIII. 750—on the origin of the population of the Indian Archipelago, III. 748—on Batavia, IV. 496—governor of Java, XII. 709—institution at Singapore established by, XX. 307.
 RAFFLESIA Arnoldi, V. 209—discovery of, XVIII. 751.
 Rafflesiaceae, nat. order of plants, V. 209.
 Rafn (Dr), XIX. 696—on the earliest discoverers of America, II. 698, n. 3—on the early Norwegian settlements in Greenland, ib.; XI. 39, n.
 Rafters, in carpentry, VI. 264—best form of, XIX. 382.
 Rafts, life, XIII. 439.
 Rag-fallowing, II. 307.
 RAGLAN (J. H. F. Somerset), baron, XVIII. 751; XXI. 375; XIX. 501, 503—death of, 509.—Castle, XV. 499.
 RAGMAN'S ROLL, XVIII. 751.
 Ragoba, XI. 491.
 Ragotski, his alliance with Sweden, XX. 851—defeated and killed by the Turks, 852.
 Rags, bleaching of, IV. 770—paper made from, XVII. 251—quantity imported, VIII. 735.
 Ragstone hills, XIII. 64.
 RAGUSA, in Dalmatia, XVIII. 751.—in Sicily, XVIII. 751.
 Rahbek (Knud Lyne), Danish author, XIX. 694.
 Raia, genus of fishes, XII. 327—R. Lem-prieri, 207, 220, 325.
 Raia, sub-order of fishes, XII. 326.
 Raiatea, island, XXI. 871.
 Ralidae, family of fishes, XII. 327—fossil, XVII. 119.
 RAIKES (Robert), XVIII. 751—first Sunday-school originated with, VIII. 746.
 Rails, in joinery, V. 751, 752; XII. 814—in railways, XVIII. 754—origin of the term, 752—edge, 753—fish-belly, ib.—bridge, 754—double-headed, 755, 756—fish-joint, 757—saddle-back or Barlow, 758.
 RAILWAYS, XVIII. 752—origin of, I. 884—locomotive adapted to, ib.—speculations on, in 1825, ib.—their superiority to common roads, ib.—practicability of high velocities on, 885—their influence on agriculture, II. 264—rickyard railways, 268—portable farm, 280—viaducts of, III. 339 (see Iron Bridges)—in collieries, VII. 125—influence on dairy husbandry, 662—as joint-stock companies, XII. 818—iron arches and bridges for, 538 *et seq.*—Egyptian railway bridges, 609—their superiority to swift canal boats, XVI. 53—conveyance of mails by, XVIII. 415—railway post-offices, 416—roofs over railway stations, XIX. 395 *et seq.*—railway springs, XX.

RAI—RAL

- 96—city railroads in New York, XVI. 225; Philadelphia, XVII. 510—termini in London, XIII. 679; Edinburgh, VIII. 394, 411; Birmingham, IV. 732; Dundee, VIII. 257—in Austria, IV. 315—Bengal, 651—Bombay, V. 3—Belgium, IV. 626—Bavaria, 517—Chili, VI. 552—Canada, 155—connected with Montreal, XV. 523—in England, VIII. 722—Scotland, XIX. 808—France, X. 217, 244—Norway, XVI. 332—Holland, XI. 582—Ireland, XII. 528—Portugal, XVIII. 398—Prussia, 670—Two Sicilies, XX. 250—Spain, 491—the Punjab, XVIII. 698—kingdom of Sardinia, XIX. 637—Russia, 536—connected with Sheffield, XX. 97—Sweden, 864—Switzerland, 890—connected with Stirling, 701; with Sidney, New South Wales, 896—formulas for the resistance of engines and trains on, 615—suicides on, 800—in United States, XXI. 427—in Turkey, 384—application of electro-magnetism to railway-breaks, 644. See the different counties in England and Scotland; the different states of North America; and the geographical articles in general, Tunnel, Locomotive, Steam-Engine, Stations, Stephenson, Watt, &c.
 RAIMBACH (Abraham), engraver, XVIII. 799.
 Rain, XIV. 656—in America, II. 672—decreases from the equator to the poles, VI. 784—rare in Egypt, VIII. 422; become more frequent since the cultivation of the palm-tree, XVII. 614—laws which regulate the distribution of, 613—circumstances which produce a high and low average fall, ib., 614—between the tropics, ib.—influences unfavourable to, ib.—rainless districts, ib.—why prognosticated by fall of the barometer, IV. 459; XVIII. 26—its influence on rocks, XV. 139—impressions of rain-drops in rocks, XVII. 131—fall of, in England, VIII. 718; France, X. 241; Orkney, XVI. 720—among the Himalayas, XI. 446—Prussia, XVIII. 662—of frogs, XIX. 76.
 Rain-gauge, XIV. 656.
 RAINBOW, XVIII. 799; XIII. 449; XIV. 679; XVI. 525, 526, 531, 687—method by which its nature was ascertained, I. 588—speculations of Maurolycus respecting it, 625—discovery of Antonio de Dominis, ib.—theory of, 898—spurious bows, ib.—coloured fringes, 899; XIV. 679—delicacy of its phenomena as a test of theory, I. 899—colours of, VI. 645—colours of supernumerary, 648—polarisation of, XVI. 688.
 Rainey (Mr), on the ocean mail service of the United States, XVIII. 426.
 Rainhill, competition of locomotives at, I. 885.
 RAISINS, XVIII. 799—of Malaga, XIV. 107—quantity imported into Britain, VIII. 735.
 Raja, family of fossil fishes, XII. 341.
 RAJAH, Indian title, XVIII. 799.
 RAJAHMUNDY, in India, XVIII. 799.
 RAJESHAYE, in India, XVIII. 800.
 RAJMAHAL, town in India, XVIII. 800.
 RAJPEELA, Indian state, XVIII. 800.
 RAJPOOTANA, in India, XVIII. 800.
 Rajpoots, XI. 464, 465—in Jeypoor, XII. 784—in Oude, XVII. 19. See Rajpootana.
 Rake, horse, II. 279.—of a ship, XVIII. 801.
 Rakeburg (J.), his work on insects, IX. 23.
 Raking mouldings, XII. 808.
 RAKKA, Turkish town, XVIII. 801.
 RALEIGH (Sir Walter), XVIII. 801; IV. 335; VIII. 713—execution of, V. 384—fond of chess, VI. 538—his attempts to colonise America, 247—his notice of the Waraws, IX. 349—on the ships of the Normans, XVI. 89—on English ships, 92—on shipping, XX. 125—his work on the Royal Navy quoted, 126—trading voyage to America, 127—his intimacy with Spenser, 506.

RAL—RAN

- Ralf (Mr), his work on Desmidiae, III. 212.
 Ralling, Swedish senator, XX. 857.
 Rallus, genus of birds, XVI. 807.
 Ralmien (M.), his seismograph, XXI. 644.
 Ram Island, III. 284.
 RAMADAN, Mohammedan fast, XVIII. 802; IV. 375; XV. 303; XX. 908.
 Ramage (Mr), on the atmosphere of the moon, IV. 43, 44.
 Rāmāyana, Indian epic poem, XVII. 520—translation of, 529.
 Ramazzini (Bernardino), his work on the diseases of artificers, XIV. 423.
 RAMBERVILLERS, town in France, XVIII. 802.
 RAMBLA, town in Spain, XVIII. 802.
 RAMBOUILLET, town in France, XVIII. 802—flock of merinos at, X. 248.
 Rambur (J. P.), his works on insects, IX. 17.
 Rameau's theory of harmony, XV. 701.
 Rameaux on the temperature of plants, V. 169.
 RAMESES, kings of Egypt, XVIII. 802; VIII. 461, 462, 463—statue of Rameses, II. 509—tomb of Rameses III., 513. See Sesostris.
 Rameum of El-Kurneh, VIII. 509; XIII. 381—musical sounds from, XIV. 492.
 RAMGURH, in India, XVIII. 802.
 Ramillies, battle of, V. 449.
 Ramiro II., XX. 462.
 Rammelsbergite, mineral, XV. 116.
 RAMMOHUN ROY (Rajah), XVIII. 802.
 RAMNAD, town in Madras, XVIII. 803.
 RAMPANT, in heraldry, XVIII. 803; XI. 332.
 RAMPART, XVIII. 803; IX. 813, 819.
 Ramphastos, genus of birds, XVI. 779.
 Ramphocetes, genus of birds, XVI. 751.
 Ramphorhynchus, fossil reptiles, XVII. 151.
 Rampion, V. 198—culture of, XI. 743.
 RAMPOOR, in India, XVIII. 803.
 Rams, Leicester, II. 345—letting of, 346—price of Cheviot rams, 347. See Sheep.
 RAMSAY (Allan), XVIII. 803; VIII. 403—his manner of editing old poetry, VII. 634—edict of the Town-council of Edinburgh regarding the sale of his works, 357, n. 1—his Monk and the Miller's Wife, VIII. 250—poetry of, XVIII. 124.—(ANDREW MICHAEL), XVIII. 803.—(Prof.), on agrarian laws, II. 246.—(Prof.), on geology, XV. 181, 182, n.
 Ramsbotham's wool-combing machine, XXI. 925.
 Ramsbottom (Mr), on salmon fry, IX. 592, 593, n. 2.
 RAMSDEN (Jesse), optician, XVIII. 804—the quadrant and sextant improved by, I. 749—his dividing machine, ib.; X. 742—his optical instruments, III. 808—his balance, IV. 384—optigraph, VI. 119—micrometers, XIV. 748, 749—his method of testing the expansion of measuring rods, XVIII. 703—his eye-piece for telescopes, XXI. 124, 125, n.—theodolite by, 331—zenith sector, ib., 335.
 Ramsey (David), his patent for ships, XX. 636.—in Huntingdon, XVIII. 804.—town in Isle of Man, XVIII. 804; XIV. 245, 246.
 RAMSGATE, town in Kent, XVIII. 804—foundation of its pier laid by means of a diving-bell, VII. 64—population, XIII. 67.
 RAMUS (Petrus), XVIII. 804; I. 39, 708—on Euclid, IX. 365—on syllogisms, XIII. 625, n.
 RAMUSIO (Giambattista), XVIII. 805; 164.
 Rana, reptile, XIX. 76—bones of, III. 86 *et seq.*—ears, 99—tongue, 100.
 Ranatra, genus of insects, IX. 165.
 Randall (Mr), on the school system of New York, XV. 820.
 RANDERS, town in Denmark, XVIII. 805.
 RANDOLPH (Thomas), poet, XVIII. 805.—regent of Scotland, XIX. 756.
 RANDOM SHOT, XVIII. 806.
 RANGE, in gunnery, XVIII. 806; XI. 143—

RAN—RAT

- English tables of ranges, 146—French, 149.
 RANGER of a forest, XVIII. 806.
 RANGOON, XVIII. 806—taken by the British in 1825, V. 646, 783.
 Raniceps, genus of fishes, XII. 270—genus of fossil reptiles, XVII. 136.
 Ranidae, family of reptiles, XIX. 75.
 Ranjit Singh, XVIII. 692, 693.
 RANK, XVIII. 806—relations of, among animals, III. 187—in China, VI. 587, 594—inequality of, necessary, VIII. 376; XX. 318—distinction of, XVI. 280—in Russia, XIX. 524. See Caste.—in the navy, XVI. 102—army, VII. 202.—AND FILE, XVIII. 806.
 Rankine (Prof.), on the mechanical theory of heat, XX. 560—on the specific heat of the air, 561—his formula representing the relation between the pressure and temperature of steam, 566—on the density of steam, 569—his work on the steam-engine and other prime movers, 617, 619—his formula for the work of gaseous steam, 623; of dry saturated steam, 624, 625—on the heat of combustion of coal, 630—on the temperature of the products of combustion of coal, 632—his formula for expressing the efficiency of a furnace, 634.
 Rannoch (Loch), XVII. 455.
 Ransom, of knights, XIII. 113.
 Ransome's plough, II. 271.—artificial stone, XX. 735—his application for protecting the surface of stones, ib.
 RANTERS, XVIII. 806; XIV. 694.
 Ranunculaceae, nat. order of plants, V. 180—acrid and narcotic species, XIV. 439.
 Ranunculus, culture of, XI. 752.
 Ranville (Gueron), X. 196 *et seq.*
 RANZ DES VACHES, XVIII. 806.
 Ranzani on birds, XVI. 731, 800.
 RAOUL ROCLETTE (Désiré), XVIII. 806.
 Rapacious birds. See Raptores.
 RAPE, crime, XVIII. 806; XIV. 428.—oil, XVI. 495, 497.—plant, II. 321, 336.
 Rape-cake, a manure, II. 301—analysis of, 405.
 Raper (Capt.), on the Himalaya mountains, XI. 448.
 Raphael. See Raffaella.
 Raphe, in botany, V. 133.
 Raphides, or crystals, in plants, V. 74.
 Raphidia, genus of insects, IX. 179.
 Raphillite, mineral, XV. 81.
 Raphiosaurus, fossil reptiles, XVII. 152.
 Raphistoma, fossil mollusks, XVII. 110.
 RAPHOE, Irish town, XVIII. 807; VIII. 106.
 RAPIN (Paul de), historian, XVIII. 807.
 Rapp (General), X. 139.
 Rappee, snuff, XXI. 295, 297.
 Raptores, order of birds, XVI. 737; XVII. 633—of Europe, 824.
 Raratonga, island, XVIII. 279—missionaries in, XXI. 871—New Testament in the language of, ib.
 Rascians, in Hungary, XII. 11.
 RASGRAD, Turkish town, XVIII. 807.
 RASK (Rasmus Christian), XVIII. 807; XIX. 696—his labours in philology, XVII. 528, 529, 534, 535—on Anglo-Saxon literature, VIII. 793.
 Rasores, order of birds, XVI. 784.
 Raspberry, culture of, XI. 718.
 Rasse, in zoology, XIV. 166.
 RASSOVA, Turkish town, XVIII. 809; VII. 654.
 RASTADT, town in Baden, XVIII. 809—negotiations at, in 1798, V. 563—murder of the French ambassador at, X. 112.
 RASTALL (John), XVIII. 809.
 RASTENBURG, town in Prussia, XVIII. 809.
 Rastrelli, architect, buildings in Petersburg erected by, XVII. 486, 491.
 Rastrites, graptolites, XVII. 96.
 RAT, XVIII. 809; XIV. 181—rats in Jamaica, XII. 682; in India, XI. 456—spiny-rat, XIV. 180—water-rat, 183—

RAT—RAY

musk-rat, *ib.*; its fur, X. 348—means of destroying rats, XXI. 548.
 RATAFIA, XVIII. 809.
 RATCHET, XVIII. 809; VII. 14, 15; XIV. 400.
 Ratcliffe, treason of, V. 504.
 Ratel, quadruped, XIV. 156.
 RATES, in the navy, XVIII. 809; XVI. 94, 95—church-rates, poor-rates (see these articles).
 RATHANGAN, Irish town, XVIII. 809.
 Rathbone (William), VII. 477, *n.*
 RATHDOWNY, Irish town, XVIII. 809.
 RATHENOW, town in Prussia, XVIII. 809—engagement at, 649.
 Rathke (Heinrich), on the crustacea, VII. 540, 544.
 RATHKEALE, Irish town, XVIII. 809.
 Rathlin, island, III. 284.
 RATIBOR, town in Prussia, XVIII. 809.
 RATIO, XVIII. 809; X. 517—in logarithms, XIII. 557—ratios of musical intervals; see Music, Temperament.
 RATION, XVIII. 809.
 RATIONALISM, XVIII. 810.
 RATHBON, XVIII. 810; IV. 518.
 RATLINES of a ship, XVIII. 810.
 Rattails in horses, XXI. 579.
 RATTANS, XVIII. 810.
 Rattle-snakes, XVII. 634; XIX. 54, 68—poison of, 45—skull and teeth of, XVI. 432—poison-fangs, *ib.*—their bite poisonous, XIV. 440.
 Rattler, steam-ship, trials of screw-propellers in, XX. 640, 659—description of, 665.
 Rattoons, XX. 792.
 Ratzeburg (J. T. C.), his work on insects, IX. 24.
 Rau, Dutch surgeon, XX. 818.
 RAUCH (Christian), sculptor, XVIII. 810.
 Raucourt (M.), on the velocity of rivers, XII. 144.
 Rauschel on the arteries, II. 790.
 RAVAILLIAC (François), assassin, XVIII. 811; X. 34.
 RAVELIN, XVIII. 811; IX. 818.
 Raven, XVI. 764.
 Ravenel's hive, III. 295.
 RAVENGLASS, town in Cumberland, XVIII. 811.
 RAVENNA, XVIII. 811; XVII. 241, 243—the Goths at, XII. 640—taken by the Lombards, XIII. 641—recovered by the Venetians, *ib.*—recession of the sea from, XIX. 207.
 Ravensbourne, river, XIII. 65.
 RAVENSBURG, XVIII. 812.
 Ravenscroft, dramatist, XXI. 171.
 Ravensworth Castle, VIII. 267.
 Ravi, or Ravee, river in the Punjab, XVIII. 687, 688; XII. 69; XIII. 158.
 Raw produce, value of, VII. 386; XIV. 273—effects of a bounty on the exportation of, VII. 387—effects of the subdivision of land in the price of, 427—price of, increased by small farms, 429—taxes on, XXI. 63; possible effects of, on wages and profits, 64.
 Rawandians, II. 599.
 RAWITSCH, or Rawicz, town in Prussia, XVIII. 812.
 Rawlinson (Sir H. C.), his discovery of the mode of interpreting cuneiform characters, IX. 361; XI. 369; XVII. 530, 534—on the tabular libraries of Assyria, XIII. 382—on Ecbatana, VIII. 370—on the capital of Assyria, XVI. 275—his Herodotus, XVII. 453.
 — (Rev. George), on the language of the Pelasgi, XVII. 371.
 RAY (John), XVIII. 812; XIV. 461—on Scotch agriculture, II. 258—his natural method of classifying plants, V. 178—on fishes, XII. 205—on the mammalia, XIV. 125—his high scientific and personal character, *ib.*—on birds, XVI. 726—his works on insects, IX. 3—his book on proverbs, XVIII. 643—on the brantlin or par, IX. 594—his intimacy with Sir Hans Sloane, XX. 332.
 — in optics, XIII. 450, 452. See Light, Spectrum, Optics.

RAY—REC

Rayger (Dr Charles), on a swarm of ants at Posen, III. 265.
 RAYMOND OF SEBONDE, XVIII. 813—Montaigne's Apology for, I. 51—his Theologia Naturalis, *ib.*, 52—Turnebus and Grotius's opinion of, 52, *n.* 3.
 — (G. M.), on singing, XV. 719.
 Raymundus de Penyafort, VI. 189.
 RAYNAL (G. T. François), XVIII. 813—on the effects of the discovery of America, and of a passage to India by Cape of Good Hope, I. 19—Diderot's literary aid to, VIII. 15.
 Raynonard on the Roman languages, XVII. 528.
 Rays, fishes, XII. 325—fossil, XVII. 119.
 Razor-shells, XV. 350.
 Razors, manufacture of, VII. 600.
 Razoumoffskin, mineral, XV. 84.
 RAZZI (G. Antonio), painter, XVIII. 813.
 Ré, island, VI. 422—Egyptian deity, XI. 382—*or* Reis, coin, XV. 436.
 Reacting machines, XII. 172.
 Reaction, in dynamics, VIII. 324—universal reaction a law of the material world, 364.
 Read (Mr), on the electricity of vegetable bodies, VIII. 570—his electrical conductors, 608—on atmospheric electricity, XIV. 660.
 Read's subsoil pulveriser, II. 271.
 Reade (Dr Joseph), his permanent soap-bubble, XVI. 600—his iriscope, 603.
 — (Rev. J. B.), his inks, XII. 383—his photographic process, XVII. 545.
 READING, town in Berkshire, XVIII. 814; V. 403.
 — in Pennsylvania, XVIII. 814.
 Readings, various, of Scripture, laws for determining, XIX. 841—dramatic reading, XXI. 172.
 REAL, XVIII. 814—in metaphysics, XIV. 611—theories of, not founded on consciousness, *ib.*—as given in consciousness, 613—in cosmology, 615—in psychology, 616—in theology, 619—in morality, 622—in the philosophy of taste, 623.
 — Spanish coin, XVIII. 814; XV. 445.
 REALEJO, in Nicaragua, XVIII. 814; XVI. 244.
 Realgar, VI. 495; XV. 122.
 REALISM, XVIII. 814. See Nominalists and Realists.
 REAMUR (R. A. F. Sieur de), XVIII. 815—his report on silk-producing spiders, III. 375—on the bee, IV. 571—on the shape of bells, 628—his patronage of Brisson, V. 368—his work on insects, IX. 4; XIV. 125—Reaumur's porcelain, XVIII. 444—his thermometer, XXI. 222, 223—on echinoderms, XXI. 992, 993.
 Reapers, wages of, II. 313; XIX. 455.
 Reaping, with the sickle, II. 313—with machinery, 314.
 — machines, II. 276—reports on, *ib.*, 277.
 REASON, XVIII. 814; XV. 811—extension of the term to the moral faculties, I. 347—distinguished from instinct, XII. 392—Jacobi's idea of, 668—law of, XIII. 253—in relation to Christianity, I. 516; XVI. 293; XVIII. 810—Kant on, XIII. 48, 49—Leibnitz on a sufficient reason. See Leibnitz.
 Reasoning, XIV. 593; XIII. 601.
 REATE, city of the Sabines, XVIII. 815.
 Reay, country of, XX. 840.
 Rebate, in joinery, XII. 808.
 REBEC, musical instrument, XVIII. 815.
 Rebecca insurrection in Wales, VI. 53.
 Rebellion, Scotch, in 1715, V. 453; in 1745, 460—Irish, in 1798, 563 (see Monmouth, O'Neale)—Chinese, VI. 597.
 Rebiting, in engraving, VIII. 804.
 REBUS, XVIII. 815.
 RECANATI, Italian city, XVIII. 816.
 Receptacle, in botany, V. 118.
 Recife, XVII. 415; V. 295.
 Reciprocal equations, II. 522.
 RECITATIVO, in music, XVIII. 816.
 RECKONING (Ship's), XVIII. 816; XVI. 25.

REC—REE

Reclaiming of moorlands, II. 358—bogs, 361—fens, 363—land, from the sea, *ib.*; from rivers, XVI. 83.
 Recoil, wheels of, XII. 172.
 RECORDE (Robert), XVIII. 816; I. 708 and *n.* 1; X. 504—on algebra, I. 558; II. 485.
 RECORDER, XVIII. 816.
 Recording machines, XIV. 415.
 RECORDS (Public), XVIII. 816.
 Recruiting, in Austria, IV. 317—Egypt, VIII. 515—France, III. 639, 642—Spain, 643—Prussia, 647—Russia, 649—Bavaria, 652—Turkey, 658—Mr Wyndham's Act, V. 599.
 Rectangle, X. 508—to find the area of, XIV. 502.
 Rectification of the circle, XX. 520.
 Rectitude, XV. 541—a real quality, *ib.*—foundation of, 543—different theories on, *ib.* *et seq.*—criterion of, 557—how a knowledge of it is acquired, *ib.*—an attribute of God, XXI. 192.
 RECTOR, XVIII. 816; XVII. 309—English, VIII. 743—in universities, XXI. 446, 475, 478, 481.
 Rectum, in man, III. 61—in animals, III. 833.
 Recupero on an eruption of water from *Ætna*, II. 197.
 RECURRING SERIES, XVIII. 816.
 Recurvirostra, genus of birds, XVI. 806.
 RECUSANTS, XVIII. 816.
 RED, colour, XVIII. 817—dyeing of, VIII. 282, 317—method of dyeing wool, 288; silk, 291; cotton and linen, 292—varieties of, XV. 59—for printing, XVIII. 556. See Chromatics.
 — band fish, XII. 303.
 — Crag, remains of cetacea in, XVII. 166.
 — fire, how produced, XVIII. 707.
 — ink, XII. 383.
 — lead, XIII. 302.
 — RIVER, XVIII. 817; XIII. 699; XVII. 605, 647.
 — River. See Halys.
 — SEA, XVIII. 817—commerce of, III. 355—canal of the, VIII. 430—projected ship canal for joining the Mediterranean with, *ib.*—evaporation in, XVII. 574—coral formations, 583.
 Red-deer, XIV. 208; XX. 212—fossil, XVII. 171.
 Red-grouse, XVI. 791—shooting, XX. 224.
 Red-rag, or Red Robin, disease in wheat, V. 172.
 Red-snow, V. 75; XI. 43.
 Redan, IX. 809, 810—at Sevastopol, XIX. 504; attack on, 509, 510.
 Redbreast, bird, XVI. 755.
 Redburn viaduct, Edinburgh and Glasgow Railway, XVIII. 763, 764.
 REDDITCH, town in Worcester, XVIII. 817.
 REDEMPTION, XVIII. 817.
 Redgrave (Mr), on the factories of ceramic wares, XVIII. 445—on the French factory law, XXI. 791.
 Redi (Francesco), XII. 660—his work on insects, IX. 3.
 Redier's dial-marking watch, VII. 35.
 Redmund's hinges, XI. 532.
 REDON, town in France, XVIII. 817.
 REDOUBT, XVIII. 817; IX. 809, 811.
 Redpole, bird, XVI. 761.
 REDRUTH, town in Cornwall, XVIII. 817.
 Redruthite, mineral, XV. 118.
 Redshank, bird, XVI. 805.
 Redstart, bird, XVI. 755.
 Redtenbacher (L.), his works on insects, IX. 22.
 Reduction, in arithmetic, III. 587—of fractions, in algebra, II. 494—of decimal fractions, III. 599, 602—of motions and forces, VIII. 340—of syllogisms, XIII. 614, 616, 617, 627.
 REDUPLICATION, in music, XVIII. 820.
 Reduvius, genus of insects, IX. 153.
 Redwing, bird, XVI. 751.
 REE (Lough), XVIII. 820; XIII. 684; XXI. 838.
 Reed (General), XVI. 303.

REE—REF

Reed, weaver's, XXI. 783.
 REEFS, coral, XVIII. 820; XXI. 1003. See Coral.
 Reeling, of silk, XX. 280, 281.
 REES (Abraham), XVIII. 820.
 — (Dr Owen), on cases of insanity in Pentonville Penitentiary, XVIII. 581.
 REETH, town in Yorkshire, XVIII. 820.
 REEVE (Clara), XVIII. 820—character of her romances, XIX. 276.
 — (Lovell), his work on conchology, XV. 327.
 Refining of iron, XII. 553—of sugar, XX. 794.
 Reflecting telescopes, XVI. 532 (see Telescope)—microscopes, XIV. 775—glasses, VI. 1.
 REFLECTION OF LIGHT, XVIII. 821; XIII. 451; XVI. 544, 553—laws of, I. 904; XVI. 553—from different kinds of mirrors, *ib.*—from disintegrated surfaces, 690—spectra produced by, 612—double reflection, 669—polarisation of light by reflection, 634; I. 902; laws of, XVI. 635, 641; I. 912—Attwood on, IV. 233. See Catoptrics.
 — of cold, VII. 532; XI. 264—of heat, I. 768; VI. 1; XI. 262.
 — in mental philosophy, XIV. 555—Descartes' clear conception of that operation of the mind afterwards called reflection, I. 57—the last faculty that unfolds itself, 58—Locke on the ideas resulting from, 110—112—Locke's use of the term, 253; ambiguous meaning he attaches to it, XIV. 560, 562 and *n.* 3, 563, *n.* 1, 577—definition of by La Harpe, I. 116, *n.*
 Reflectors in lighthouses, XIII. 469, 470 *et seq.* See Lighthouses.
 REFORM, PARLIAMENTARY, XVIII. 821. See Parliament.
 — Act, VIII. 778; XVII. 292; X. 738—passing of the, V. 663; XVII. 299—provisions of, V. 660—Sir R. Peel's opposition to, XVII. 364.
 REFORMATION (The), XVIII. 821—Burnet's history of, V. 792—in Denmark, VII. 740—England, VIII. 698, 702, 706; VII. 483—Scotland, XIII. 127; XIX. 772 *et seq.*—Holland, XI. 588—Switzerland, XX. 885—a consequence of the revival of letters, I. 15—its influence on the progress of society, IX. 396—extended to Ireland, XII. 475—its influence on the progress of medicine, XIV. 459; and on education, XV. 809—supposed to have been hostile to art in England, XVII. 77; this opinion unfounded, XIX. 866—destruction of MSS. at the, XVII. 212—connection of mysticism with, XV. 756—conduct of James V. of Scotland in reference to, XIX. 774—Stuart's history of, in Scotland, XX. 783—opposition to, in Lancashire, XIII. 180—in Kirkcudbright, 101. See Luther, Knox, &c.
 Reformatory in religion, I. 524—principal hindrances to, *ib.*; attaching too much importance to matters not essential, 525; mistaken views of Christian unity, *ib.* 526; dread of innovations, 525, 529—what is meant by reformation of a church, 530—dangers to which reformers are most liable, *ib.*
 Reformatory Schools, in England, XVIII. 202—general results of the system, 203—in Scotland, 205—Ireland, 208—reformatory measures for the young, 586—legislative measures regarding, 587.
 Reformed Presbyterian Church, XVIII. 501—in Russia, XIX. 529.
 Refracting telescopes, II. 39—microscopes, XIV. 776—glasses, VI. 1. See Telescope.
 REFRACTION, XVIII. 830—of light, XIII. 449, 451, 452; XVI. 529, 556—discovery of the true law of, by Snellius, I. 627; XVI. 530; yet claimed by Descartes, *ib.*; VI. 279—angle of, III. 143—in astronomy, I. 823; IV. 8—theory of, *ib.*—law of, 9—observations of diverse astronomers on, *ib.*—mode of finding how much the rising of the

REF—REG

sun or a star is advanced by, 112—
atmospheric refraction in the polar re-
gions, XVII. 584—table of atmospheric
refractions, IV. 148—separation of
colours by, VI. 644—laws of extraordi-
nary, 653—double, I. 901; XIII. 452;
XV. 56; XVI. 531, 625; theory of, I.
905; XVI. 543; production of, 671; by
pressure, 542; law of, in crystals, 626
et seq., I. 905—Beccaria on, IV. 560; po-
larisation of light by, XVI. 633, 542;
colours of doubly-refracting substances,
VI. 655—Dollond's experiments on,
VIII. 94—Fermat on, IX. 517—table of
refractive powers, XVI. 558—by prisms,
562—through plane glasses, 563—by
spheres, 564—convex lenses, *ib.*—con-
cave lenses, 565—cylindrical lenses, 567
—polarisation of light by, 642 *et seq.*—
conical, I. 918; XVI. 548, 656—triple,
546—explanation of simple and double,
I. 895.
Refraction of heat, VI. 1; XIII. 452; XI.
266—double refraction of, 267.
Refractors, cylindric, for lighthouses, XIII.
472.
Refrangibility of light, I. 748; XVI. 578,
579—of heat, I. 956. See Refraction.
Refrigerators, for cooling wort, V. 328—of
a still, VIII. 47, 49.
REGALIA, XVIII. 830.
REGARDANT, in heraldry, XVIII. 830; XI.
332.
REGATTA, XVIII. 830.
Regen, in Bavaria, IV. 516.
Regency of Britain, the Prince of Wales'
title to the, V. 531—his appointment
to the, 611.
Regeneration, in theology, XXI. 218.
REGENT, XVIII. 830—in universities, XXI.
448, 455.
—bird, XVI. 754.
Regent's Canal, XIII. 662—bridge, XII.
603.
—Park, London, XIII. 668.
REGGIO, town of Naples, XVIII. 830; XIX.
103; XX. 242.
—town in northern Italy, XVIII. 830.
Regiam Majestatem, XX. 314.
REGIFUGIUM, XVIII. 831.
REGILLUS (Lake of), XVIII. 831.
REGIMEN, XVIII. 831. See Dietetics.
REGIMENT, XVIII. 831. See Army.
REGIONOMANTUS, XVIII. 831; VI. 82—ad-
vanced mathematics by his works, I. 551
—introduced trigonometry and decimal
fractions, *ib.*; X. 504—his artificial dove,
II. 166—his improvement of almanacs,
598—his division of the radius, III. 578
—his astronomical labours, 796; I. 600
—his mathematical works, X. 504—Co-
pernicus' admiration of, VII. 348. See
Müller (Johann).
Regions of the human body, III. 1—of the
head, in phrenology, XVII. 565.
REGIS (Pierre Sylvain), XVIII. 831.
Register-barometers, IV. 460.
Register-House, Edinburgh, VIII. 396—
dome of, XIX. 388.
Register Office, General, London, XVIII.
834.
Registering thermometers, XXI. 224.
Registers, parish, XV. 600; XVIII. 839—
differences in those of different countries,
350—inferences drawn from, 352—fal-
lacy of mortuary, 355. See Registra-
tion.
Registrar-general, XVIII. 834—superin-
tendent registrars, *ib.*; of births, deaths,
and marriages, *ib.*—registrars in Scot-
land, 840.
REGISTRATION (general) of births, baptisms,
marriages, &c., XVIII. 831—in Belgium,
IV. 615—births, marriages, and deaths,
registered in England, in 1852, VIII.
755, 756.
—of DEEDS, XVIII. 842.
—of letters, XVIII. 417; XXI. 67—
colonial and foreign, XVIII. 418.
Regium donum, XII. 532.
REGNAULT (Henri-Victor), XVIII. 843; I.
954—on the coefficient of the expansion
of gases, *ib.* and *n.* 4—on the elasticity

REG—REI

of steam, 958; XX. 558, 559—on latent
heat, I. 958—on specific heat and hy-
grometry, *ib.*—on hydrodynamics, XII.
76, 158—on the compressibility of fluids,
78—his condenser hygrometer, 187—his
analysis of the mud of the Nile, VIII.
425—his analysis of sea-water, XVII.
574—on the expansion of mercury,
XVIII. 702; XXI. 221—on salt crystals,
XIX. 584—on the specific heat of air,
XX. 561—his formulas representing the
relation between the pressure and tem-
perature of steam, 566—on the latent
heat of steam, *ib.*—on gaseous steam,
570—on the thermometer, XXI. 223.
Regnier (General), V. 602.
—de Graaf, anatomist, II. 762.
Regnier's dynamometer, VIII. 365.
Regona (L.), his works on the silk-worm,
IX. 24.
Regula, in architecture, III. 512.
Regulator of a watch, VII. 28—of gas-
lights, X. 421.
Regule, in heraldry, XI. 325.
REGULUS (M. Atilius), Roman consul,
XVIII. 843; XIX. 309; VI. 288, 289,
290—his encounter with a huge serpent,
XIX. 63.
—monk, III. 136.
—genus of birds, XVI. 756.
—star, IV. 79.
—of antimony, cohesion of, XX. 757.
REHER, in India, XVIII. 843.
Rehoboth, XII. 767.
Reich of Freiberg, on the earth's density,
I. 835, and *n.* 1.
REICHA (Anton), XVIII. 843—on musical
scales, XV. 708—on melody, 715, 716,
718—on the fugue, 735 and *n.*—on
musical composition, 739.
REICHENAU, in Bohemia, XVIII. 843.
REICHENBACH, town in Saxony, XVIII.
844.
—town in Prussia, XVIII. 844—
treaty of, X. 162.
—(Baron), his odyle theory of mes-
meric somnambulism, XX. 434—experi-
ments of, 435—notice from a review of
his work, *ib.*
—(H. T. L.), his work on insects, IX.
12.
REICHENBERG, town in Bohemia, XVIII.
844.
Reid (General), his bequest to the Univer-
sity of Edinburgh, XIII. 402; XXI. 483.
—(DR THOMAS), XIX. 1—ambiguity
of a passage in his works relative to
colour, I. 65 *n.*; and relative to the per-
ception of visible figure, 66 *n.*—sense in
which he uses the word *suggestion*, 167,
n. 2—great object of his inquiry, 218—
Dr Adam Ferguson on his works, 219, *n.* 1—
his essays on the Intellectual and on
the Active Powers of Man, 222—unfor-
tunate in his choice of the terms *com-
mon sense* and *instinct*, 403—on analogi-
cal reasoning, II. 745—on the difference
between anger and resentment, III. 141
—on the mental capacity of the blind,
IV. 774—on hearing, XIV. 564—atten-
tion, 575—imagination, 576—Royer
Collard's esteem for his works, XIX.
457—his attempted refutation of Hume's
arguments, XIX. 709.
—(Thomas), on clocks, VII. 20.
—(SIR WILLIAM), XIX. 3.
REIGATE, in Surrey, XIX. 3—firestone of,
XX. 712.
Reikjavik, town in Iceland, XII. 199, 200.
Reil on the brain, II. 767—on the neuri-
lema, 808.
REIMARUS (H. Samuel), XIX. 3—on the
character of Jesus Christ, XII. 762 and
n. 5, 763.
REIMS. See Rheims.
Reinaud (M.), on Greek fire and gun-
powder, XI. 151.
Rein-deer, XIV. 206; XVII. 632; XVIII.
179; IX. 387—of Greenland, XI. 43—
Lapland, XIII. 236, 239, 240—Norway,
XVI. 824—gaddy of, XIII. 236; migra-
tions caused by, 240—fossil, XVII. 170,
171.

REI—REM

Rein-deer moss, or lichen, XIII. 235; V.
217.
Reineke, a fable, IX. 462.
REINESIUS (Thomas), XIX. 4.
Reinhard, his definition of theology, XXI.
181.
REINHOLD (Erasmus), XIX. 4—his opi-
nion of Kant's principle called Practical
Reason, I. 198—his reasons why Kant's
Critique of Pure Reason made so great
an impression in Germany, *ib.*
—astronomer, III. 798.
REISKE (Johann Jacob), XIX. 4.
Reiss on voltaic electricity, XXI. 627.
Reisseissen on the vessels of the mucous
membranes, II. 837.
Reiz (F. Wolfgang), philologist, XVII.
524.
Rejangs, people of Sumatra, XX. 805.
RELAND (Adrian), XIX. 4.
Relations of animals, Lamarck's views on,
III. 187.
Relative pronoun, X. 757.
Relays, in electric telegraphs, XXI. 108,
109, 11.
RELIEF in sculpture, XIX. 4, 845—in
painting, 5—in fortification, IX. 798.
—Church, XVIII. 493—union of, with
the Secession, 500—places of worship,
in Scotland, XIX. 801.
RELIGION, XIX. 5—of Abyssinia, II. 57,
221—Africa, 223—Algiers, 576—Asia,
III. 750—Attica, IV. 216—Australia,
297—Austria, 317—Bavaria, 519—Bel-
gium, 616—Bolivia, 829—Brazil, V. 297
—Burmah, 782—Canada, VI. 158—
Chile, 546—China, 568—United States,
XXI. 422 (see the other geographical
articles)—operation of conscience in
relation to religious systems, I. 427—
the object of Scripture is to teach reli-
gion, 455—introduction of false reli-
gions, *ib.*; crept in gradually, 464—
pagan religions, 456—a pagan's reason
for holding his religion, 466; and a
Christian's, *ib.*—reformation in, 524—
corrections of abuses in, generally re-
sisted or delayed, 537—ancient notion
of, III. 545, 546—Aristotle's views of,
569—employed as an aid to Government,
IV. 216—arguments of the dissenters in
1772 against articles of faith, V. 474,
475—liberality and toleration regarding,
in Buenos Ayres, 727—union of, with a
warlike spirit, in chivalry, VI. 603—
decay of, during the French revolution,
X. 84—opposition to its re-establishment
in France, 125, *n.*—ecclesiastical history,
XI. 540—religious worship and societies
in London, XIII. 666—when a state
institution, ought to be freely discussed
by the press, 372—passive obedience
and non-resistance, once a religious
doctrine, 373—a cause of insanity,
XIV. 536—Plato on, XVII. 812—religi-
ous aspect of rivers, XIX. 179, 222—
difference between religious knowledge
and theological philosophy, I. 519—
religion established by law, has not, on
that ground, any claim on the con-
science, 542—elements of, XXI. 184.
See Buddha, Christianity, Devotion,
God, Mohammedanism, Mythology, Per-
secution, Polytheism, Popery, Presby-
terianism, Reformation, Roman Catho-
lics and Roman Catholicism, Super-
stition, Theology, Toleration, Gospel,
&c. &c.
Religious education, XV. 812.
—madness, XIV. 533, 536.
—missions, XV. 269. See Missions.
REMBANG, in Java, XIX. 5.
REMBRANDT VAN RHIN, XIX. 5—his pic-
tures, III. 711; XVII. 75.
Remesses, XI. 388.
Reminiscence, Plato on, XVII. 804.
REMIREMONT, French town, XIX. 6.
REMISCHIED, Prussian town, XIX. 6.
REMO (San), Italian seaport, XIX. 6.
Remond (M. Dubois), on the electrical
currents of the human body, VIII. 571
—on voltaic electricity, XXI. 633. See
Reymond.

REM—REP

Remonstrant Synod of Ulster, XII. 532.
REMONSTRANTS, XIX. 6; III. 617; XI.
573; XVIII. 478—their views of ori-
ginal sin, XXI. 204.
Remontoire escapements, VII. 11, 19, 21;
XVII. 386.
Remora, family of fishes, XII. 270—Pliny's
account of, *ib.*—in India, XI. 457—used
for catching turtle, *ib.*
Remorse, I. 384.
REMPHAN, XIX. 6.
REMUS, XIX. 6; 296.
REMUSAT (J. P. Abel), XIX. 6—on the
Chinese alphabet, II. 609.
REMY (St), French town, XIX. 7.
RENAIX, town in Belgium, XIX. 7.
Renal calculi, among cattle, XXI. 570.
Renaldini's thermometer, IV. 457.
Renan (M.), on the Egyptian language,
XI. 412.
RENAUDOT (Eusèbe), orientalist, XIX. 7—
on the Greek alphabet, II. 612.
—(Theophraste), his Gazette, XVI.
195, 196.
RENDEL (James Meadows), engineer, XIX.
7—on the construction of breakwaters,
XI. 221.
Rendle (Mr), of Plymouth, his mode of
heating hot-houses, XI. 724.
RENDSEBURG, town in Denmark, XIX. 7.
RÉNÉ of Anjou, XIX. 8; XIII. 694; XX.
259, 263.
—(Marc), Marquis de Montalembert,
his work on fortification, IX. 825.
Renevier (M.), on the lower greensand,
XV. 210, *n.*
RENFREW, Scotch town, XIX. 8.
RENFREWSHIRE, XIX. 8—separated from
Lanarkshire, XIII. 174—agricultural
statistics, XIX. 796, 797, 798—popula-
tion, 799.
RENI, Turkish town, XIX. 9.
RENNELL (James), XIX. 9—on the Peri-
plus of Hanno, II. 209; X. 461—on the
ruins of Babylon, IV. 344—on the geo-
graphy of India, X. 473—on the con-
quest of India by the Mahomedans,
XI. 478—on the climate of the Ghauts,
X. 599—on the site of Troy, XXI. 356,
358.
RENNES, town in France, XIX. 10—popu-
lation, X. 277.
Rennet, VII. 624; XV. 10.
Rennie (George), on the friction of water,
XII. 76—his experiments in hydraulics,
153—on the transverse strength of
stones, XX. 717, 718.
—(James), his works on insects, IX. 17.
—(JOHN), XIX. 10—on the Plymouth
breakwater, XI. 222; V. 307—South-
wark Bridge designed by, 361; XII.
583—his iron bridges, *ib.*—on canals,
XVI. 53—his plan of Waterloo Bridge,
V. 363—his diving-bells at Howth and
Plymouth, VIII. 65, 66.
Renour (A. G.), on the printing of Aldus,
IV. 710.
Renschild, Swedish general, XX. 854.
RENT, XIX. 13—nature, origin, and pro-
gress of, XVIII. 243—does not enter
into price, 247—influence of situation
on, *ib.*—of land in England, VIII. 724
—of farms, II. 263, 264—taxes on, XX.
43—would not be affected by a tax on
profits, except in the case of the farmer,
46.
RENTON, village in Dumbartonshire, XIX.
13.
RENWICK (James), martyr, XIX. 13;
XVIII. 501.
Renzi (Dr Salvatore de), on the rate of
mortality in Naples, XV. 624.
Réole (La), in France, X. 632.
REPEATING CIRCLE, XIX. 13; V. 37.
—clocks, VII. 16.
Repentance, in theology, XXI. 218.
Rephan, XIX. 6.
REPP (T. Gudmundsson), XIX. 13.
Representative government, X. 735.
REPRIEVE, XIX. 13.
Reproduction, organs of, in man, III. 68;
in brutes, 113; in plants, V. 112—phy-
siology of, 148, 152—in the crustacea,
2 A

REP—RES

VII. 539—reproduction of lost or mutilated organs in animals, III. 176, 375; XIX. 29, 82—function of, XVII. 656, 668—diseases of, 702—in zoophytes, XXI. 973 *et seq.*, 1002. See Generation.

REPTILIA, or Reptiles, XIX. 13; II. 772—their bones, III. 74, 86—muscles, 91—organs of smell, 94—eyes, 95 *et seq.*—ears, 99—tongue, 100—vocal organs, 102—nervous system, 103—brain, 104—teeth, 105; XVI. 428 *et seq.*—stomach, III. 109—intestines, 110—heart, 112—lungs, 113—secretory organs, *ib.*—hybernation of, 181; XII. 62—blood globules of, II. 779—kinds used as food, IX. 763—figures of, borne on arms, XI. 333—their odontology as applied to classification, XVI. 477—order of their appearance in the strata of the earth, XVII. 92—fossil, 132 *et seq.*—geological distribution of, 154—foot-prints of, 129, 130—distribution of, 634—number known, 631—period of the greatest development of reptile life, 640—mode of fecundation, 683—of Africa, II. 218—America, 714—Ceylon, VI. 394—India, XI. 456—Madeira, XIII. 800—Sumatra, XX. 804. See Serpents, Tortoises, Lizards, Crocodiles, &c.

REPTON (Humphry), landscape-gardener, XIX. 87.

— in Derbyshire, VII. 753.

REPUBLIC, XIX. 87—Plato on a, XVII. 809—republics in Europe, IX. 397—Swiss, XX. 886. See Democracy, Athens, United States, &c.

Repulsion, IV. 219—electrical, VIII. 536, 554—law of, 549—alternate attraction and repulsion in some bodies, XX. 752, 753—the cause of some bodies swimming in liquid fluids specifically lighter than themselves, 753.

REQUENA, town in Spain, XIX. 87.

Requeno (Vincenzo), on the ancient lyre, XIII. 752.

Requesens, XI. 568.

Requenia, fossil mollusks, XVII. 107.

REQUISTA, village in France, XIX. 87.

Resch Glutha, XII. 776.

Reschid Pasha, XXI. 376.

Resedaceæ, nat. order of plants, V. 182.

Resende (Garcia de), X. 623, n. 1.

Resenius (Prof.), his edition of the Edda, VIII. 388.

Reservoirs, water passing from one to another, XII. 128—altitude of, 130.

RESHT, or Reshd, Persian town, XIX. 87.

Residence, limits of insurance policy as to, XII. 410.

RESIN, XIX. 87—in chemistry, VI. 517—in mineralogy, XV. 123—electricity developed during the melting and cooling of, VIII. 565—specific gravity of, XII. 89—quantity imported, VIII. 735—how distinguished from gum, XI. 93—resin-gas, X. 428—used as the bases of varnish, XXI. 526.

RESINA, Neapolitan town, XIX. 88.

Resinous electricity, VIII. 535, 537—discovery of, 525.

Resist-pastes, in calico-printing, VIII. 317.

RESISTANCE OF FLUIDS, XIX. 88; 192 *et seq.*; XII. 159; I. 886—to the motion of a vessel, XX. 158, 662—law of, 663.

— of the air, XI. 106 *et seq.*; XVIII. 67—to the vibrations of a pendulum, XVII. 381. See Projectiles.

— of materials, V. 348—of stones, XX. 713, 715, 717—of walls, 720. See Strength of Materials.

— in mechanics, XIV. 380, 381—rolling resistance, 408.

Resolution of forces, VIII. 334.

— in music, XV. 722.

Respect, duty of, XV. 566.

Respiration, XVII. 662; III. 170; XVIII. 72—quality of the air changed by, 73—mechanism of, *ib.*—essential to mammiferous animals from births, II. 726—different modes of, in vertebrated animals, 772, 773—of plants, V. 104—of arachnides, III. 369—bees, IV. 573—insects, IX. 47—fishes, XII. 225—whales,

RES—REV

XIV. 237—reptiles, XIX. 14; the batrachians, 74; serpents, 48—length of time during which the breath can be held in, VIII. 55—mode of restoring it, in drowned persons, 182—respiratory food, VI. 522. See Amphibia, Diving.

Respiration (organs of), in man, III. 66—in the lower animals, 112—diseases of, XXI. 571—in the crustacea, VII. 539—in birds, XVI. 734—in the echinodermata, XXI. 983. See Lungs, Phthisis.

Ressons on gurnery, XI. 108.

Restadt, peace of, IX. 370.

Restell's lock, XIII. 539.

Restiaceæ, nat. order of plants, V. 215.

Restif de la Bretonne, character of his novels, XIX. 289.

Restiform bodies of the brain, III. 55.

Restoration of Charles II., V. 420—literature of that period, XV. 29—newspapers, XVI. 182.

Resurrection, analogy between it and the metamorphosis of insects, IX. 54—of Jesus Christ, XII. 560.

Retail dealers, advantage of, XVIII. 237.

Retaliation, Arabian law of, III. 352—regarded by Socrates as a duty, XX. 397.

Retarded motions, VIII. 344.

Retarding forces, VIII. 347.

Rete mucosum of the skin, II. 834; VII. 223.

Retention, a universal law of mind, XIX. 111.

Retford (Dr), on Roman Catholic missionaries, XV. 277.

— (East), town in Nottinghamshire, XIX. 89.

RETHEL, town in France, XIX. 89.

RETICLE micrometers, XIX. 89; XIV. 758.

RETICULATION, XIX. 89. See Lace.

RETIMO, or Rettimo, in Crete, XIX. 94.

Retina of the eye, III. 44; XIII. 461; XVIII. 678—occasional insensibility of, in oblique vision, XVI. 695—whether the seat of vision, 695—duration of impressions on, *ib.*—in various animals, III. 97.

Retinasphalt, XV. 124.

Retinite, mineral, XV. 124.

Retort, gas retorts, X. 411—steam-boiler, XX. 615.

Retreat, The, lunatic asylum, XIV. 528.

Retreats in war, XXI. 718.

Retriever-dogs, XX. 220.

Retting of flax, II. 332; IX. 655; XIII. 494—Schenck and Watt's process, II. 332.

RETZ (Cardinal de), XIX. 94.

Retzia, fossil mollusks, XVII. 104.

Retzius (Prof.), on the teeth, XVI. 407, 409.

REUCHLIN (Johann), XIX. 95; XVII. 523—his method of pronouncing Greek, IX. 322.

REUS, town in Spain, XIX. 96.

REUSS, in Germany, XIX. 96.

— (M.), on the capillaries, II. 799.

Reussin, mineral, XV. 99.

REUTLINGEN, in Württemberg, XIX. 97.

Revalenta Arabica, an empirical preparation, XIII. 333.

REVEL, Russian seaport, XIX. 97; IX. 339—Lutheran church at, 529.

— town in France, XIX. 97.

REVELATION, XIX. 100—proof that there must originally have been some revelation to man, I. 450, 452—disbelief in, from there being no infallible interpreter, 500—revealed law, XIII. 253. See Theology, Scripture.

— Book of, XIX. 98; III. 297.

Reveley (Mr), his description of the jarrah tree, XXI. 278.

Revenge, law of, for blood, among the Arabs, III. 352—a frequent cause of cannibalism among the Fijians, XVIII. 275.

Revenue, of Attica, IV. 217—of the United Kingdom, VIII. 751—items from which it arises, XXI. 75—of Ireland, XII. 525—of the United States, XXI. 428. See Funding System, Political Economy, Taxation, and the different Kingdoms.

REV—RHE

Reverberatory furnace, X. 356.

Reverence due to the Deity, XV. 571; XXI. 195. See Devotion, Veneration.

REVEREND, XIX. 100.

REVERSION, in English law, XIX. 100.

— in annuities, XIX. 100. See Annuities.

— of series, in algebra, II. 532.

Revêtement, in fortification, XI. 819.

Revett's Antiquities of Athens, III. 456.

REVIEW, XIX. 100. See Edinburgh Review, Quarterly Review.

Revival of learning in Europe, I. 14; VII. 535; XIII. 387, 388—naturally produced the Reformation, I. 15—its effects on the advancement of physical, metaphysical, moral, and political science, 16–20. See Learning.

REVOLUTION, in England, of 1688, XIX. 100; V. 439; VI. 667; XI. 578—in Greece, 22—in Chile and La Plata, II. 701.

— (French, of 1790), V. 535; X. 45—retrospective view of the, 121—its effects on agriculture, 245—on religious institutions, 267—organisation of the police at the outbreak of, XVIII. 187.

REVOLVER, pistol, XIX. 100—Col. Colt's, XI. 102—Deane and Adam's, *ib.*

Revolving magnetism, XXI. 638.

REWA CAUNTA, in India, XIX. 100.

REWAH, Indian state, XIX. 100.

Rewards (future), described in the popular mythology of the Greeks and Romans, I. 459—temporal, under the Mosaic dispensation, 470, 471, 473, 478—not one of the sanctions of the Mosaic law, 479; but one of the sanctions of the New Testament dispensation, 481.

Reymond (D. Du Bois), on animal electricity, I. 961. See Remond.

Reynaud (Jean), on the form of continents, XVII. 571.

REYNOLDS (Sir Joshua), XIX. 101; XVII. 56, 78, 82, 83, 84—his character as a painter, III. 714; XVII. 74—on the imitation of nature in painting, III. 716—on Raphael's style, 708—his theory of beauty, IV. 539—his friendship with Burke, V. 775; Goldsmith, X. 706—his tribute to Vanbrugh, XXI. 519—on Gainsborough, X. 367.

— (William), on the strength of gun metal, V. 358, 360—on iron cement, 361.

Rezat, in Bavaria, IV. 516.

RHABDOLOGY, XIX. 102; XV. 777.

RHADAMANTHUS, XIX. 102; VII. 493.

RHETIA, XIX. 102.

Rhætian Alps, II. 624; X. 582; XX. 888.

Rhæticus (G. J.), X. 505; II. 547; XIX. 104.

Rhæto-Romanic language, IX. 391.

Rhagium, genus of insects, IX. 146.

Rhamnaceæ, nat. order of plants, V. 183.

RHAMNUS, town of Greece, XIX. 103.

Rhamphichthys, genus of fishes, XII. 234, 233.

Rhamphognathus, genus of fossil fishes, XII. 346.

Rhamphomyia, genus of insects, IX. 236.

Rhamphosus, genus of fossil fishes, XII. 344.

Rhamphus, genus of insect, IX. 140.

Rhames the Great, Scythian campaign of, XVII. 264.

Rhaphium, genus of insects, IX. 242.

RHAPSODIST, XIX. 103.

Rhatany order of plants, V. 183.

RHAZES, Arabian physician, XIX. 103—his medical writings, XIV. 456—his skill in surgery, XX. 815.

Rhea, Egyptian deity, XI. 382 and n. 9.

— genus of birds, XVI. 796.

RHEGIUM, XIX. 103; XVIII. 830—coins of, XVI. 363.

Rheidol, in Wales, VI. 233.

RHEIMS, town in France, XIX. 103—population, X. 277.

Rheingau, XV. 801; XIX. 144—wines of, XXI. 885.

Rheitas' eye-piece for telescopes, XXI. 124.

RHENANUS (Beatus), XIX. 104.

RHE—RHO

RHENUS, XIX. 104. See Rhine.

Rheostats, Wheatstone's, I. 984; XXI. 625—for considerable resistance, *ib.*—for feeble resistance, *ib.*

RHETICUS, XIX. 104. See Rhaeticus.

RHETORIC, XIX. 104—Aristotle on, I. 54; III. 556—characters of abbreviation in, VI. 419—among the Druids, VIII. 189—reprobated by Plato, XVII. 802—article on, in this work, by Professor Spalding, XX. 496.

RHEUMATISM, XIX. 142—in veterinary science, XXI. 557.

RHIN, Bas, and Haut, departments of France, XIX. 143.

Rhina, genus of insects, IX. 140.

— genus of fishes, XII. 327—dental pavement of the upper jaw, XVI. 423.

RHINE, river, XIX. 144; IX. 384; X. 582; XI. 581; XVII. 647; XVIII. 662; XIX. 181; XX. 888—navigation of, IX. 385—delta of, XVII. 586—velocity of its current, XII. 144, 145—quantity of matter suspended in the current of, XV. 86 and n. 1.

— PROVINCE of, XIX. 145; IV. 518—rocks of, XV. 199, 202.

— Confederation of the, X. 142.

Rhineland, agriculture of, XVIII. 666.

Rhinelepis, genus of fishes, XII. 263.

Rhinella, genus of reptiles, XIX. 81.

Rhinellus, genus of fossil fishes, XII. 338.

Rhingia, genus of insects, IX. 240.

Rhinichthys, genus of fishes, XII. 258.

Rhinobatidae, family of fishes, XII. 327.

Rhinobatus, genus of fishes, XII. 327.

RHINOCEROS, XIX. 145; XIV. 198, 204—in Abyssinia, II. 55—Africa, 217—Assam, III. 764—Java, XII. 702—Sumatra, XX. 804—dentition of, XVI. 471—fossil, XVII. 169.

Rhinodon, genus of fishes, XII. 324.

Rhinodontidae, family of fishes, XII. 324.

Rhinolophus, genus of mammalia, XIV. 149.

Rhinopoma, genus of mammalia, XIV. 149.

Rhinoptera, genus of fishes, XII. 328.

Rhinosimus, genus of insects, IX. 138.

Rhinotia, genus of insects, IX. 138.

Rhinotragus, genus of insects, IX. 145.

RHO, seaport in the Malay peninsula, XIX. 145.

Rhipidlia, genus of insects, IX. 227.

Rhipicera, genus of insects, IX. 107.

Rhisostrogus, genus of insects, IX. 125.

Rhizobolaceæ, nat. order of plants, V. 186.

Rhizocarpeæ, nat. order of ferns, V. 144, 216.

Rhizodus, genus of fossil fishes, XVII. 123, 124.

Rhizome, in botany, V. 79, 143.

Rhizophoraceæ, nat. order of plants, V. 191.

Rhizophyza, zoophytes, XXI. 999.

Rhizopoda, class of fossils, XVII. 93—of zoophytes, XXI. 1006.

RHOE ISLAND, XIX. 146; XXI. 419, 433—debt of, 428—wines of, 888.

RHODES, XIX. 147—Colossus of, VI. 422; VII. 151, 350; probably served as a lighthouse, XIII. 463—sculptors natives of, XIX. 858—coins of, XVI. 377.

— (Alexander de), his account of tea, XXI. 88.

Rhodeus, genus of fossil fishes, XII. 347.

Rhodium, VI. 499—specific gravity of, XII. 88—oil of, used in destroying vermin, XXI. 548.

Rhodus (Joannes), his Life of Celsus, XX. 812, n. 1.

Rhodizite, mineral, XV. 94.

Rhodochrome, mineral, XV. 80.

Rhododendron, XI. 748—in Ceylon, VI. 394.

RHODOMANN (Laurentius), XIX. 149.

Rhodonite, mineral, XV. 82.

Rhodope, genus of mollusks, XV. 369.

— mountain, XXI. 376.

Rhodospirææ, sub-order of algæ, V. 218.

Rhocæus, ancient sculptor, XIX. 853.

Rhomb Spar, XV. 92.

Rhombic system, in crystallography, XV. 47—twin crystals in, 52.

RHO—RIC

- RHOMBIC, XIX. 147; X. 508—crystallisation, VII. 551, n. 4.
 Rhombus, XIX. 147; X. 508.
 — genus of fishes, XII. 272—fossil, 345; XVII. 128.
 RHONE, French department, XIX. 149.
 — river, XIX. 149; XVII. 647; XX. 888—blue colour of, XVII. 574—floods, 600—slope and velocity, 601—Perte du, XX. 887—course of, through Valais, XXI. 504.
 RHUBARB, XIX. 150; V. 204—culture of, XI. 744—quantity imported, VIII. 735.
 RUDDLAN, Welsh town, XIX. 150.
 — Marsh, trigonometrical base on, XXI. 331, 334.
 RHUMB and Rhumbline, XIX. 150; X. 485.
 Rhyddlaw, XIX. 150.
 RHYME, XIX. 150.
 Rhymer (Thomas the). See Thomas of Erceldoune.
 Rhyncha, genus of birds, XVI. 803.
 Rhynchæus, genus of insects, IX. 140.
 Rhynchaspis, genus of birds, XVI. 817.
 Rhynchichthys, genus of fishes, XII. 279.
 Rhynchites, genus of insects, IX. 138.
 Rhynchobates, genus of fishes, XII. 327.
 Rhynchobdella, genus of fishes, XII. 292.
 Rhyncholites, fossil mollusks, XVII. 111, 113.
 Rhynchonella, genus of mollusks, XV. 338.
 Rhynchonellidae, family of mollusks, XV. 338.
 Rhynchophora, family of insects, IX. 137.
 Rhynchops, genus of birds, XVI. 817.
 Rhynchosaurus, fossil reptiles, XVII. 141.
 Rhynchostoma, tribe of insects, IX. 138.
 Rhyphus, genus of insects, IX. 230.
 Rhyticus, genus of fishes, XII. 276.
 RHYTHM, XIX. 150, 254—musical, XV. 717.
 RHYTHMOMETER, XIX. 150.
 Rhyzophagus, genus of insects, IX. 142.
 RIAZAN, in Russia, XIX. 151, 521.
 Ribadeneira (Pietro), his history of Loyola, XII. 750.
 RIBALTA (Francisco), painter, XIX. 151.
 — (JUAN), painter, XIX. 151.
 Ribble, English river, XIII. 177; XVIII. 510; XXI. 957—improvement of its navigation, XVI. 77.
 Ribbon apodals, sub-order of fishes, XII. 229.
 Ribbon-fish, XII. 303.
 Ribbon-jasper, XV. 69.
 Ribbon-saws, XIX. 678.
 RIBEAUVILLE, town in France, XIX. 151.
 Ribera, in the Azores, IV. 336.
 RIBERA (José de), painter, XIX. 152.
 Ribgrass order of plants, V. 203—spike of ribgrass, 115.
 Ribs of man, III. 9, 10,—of the mammalia, 76—birds, 85—reptiles, 87—fishes, 89.
 RICARDO (David), XIX. 152; V. 636—on the high price of gold before the recoinage, VII. 79—on the wages of labour, 143, 144—on the corn-laws, 368 *et seq.*—on the cottage system, 435—on bullion, IX. 437—his article on the Funding System in this work, X. 328, n.—on the currency, XV. 429—on political economy, XVIII. 249—his theory of profits, 252—Malthus' examination of his doctrines, XIV. 117—on taxation, XXI. 46 *et seq.*—on tithes, 63.
 RICAUT (Sir Paul), XIX. 156.
 Riccate on fluxions, IX. 738.
 RICCI (Sebastiano), painter, XIX. 156; XVII. 72.
 Ricciaceæ, sub-order of hepaticæ, V. 217.
 RICCIARELLI (Daniele), painter, XIX. 156.
 RICCIOLI (G. Battista), XIX. 156—his astronomical labours and opinions, I. 611; III. 801—his catalogue of stars, IV. 80.
 Riccoboni on love-intrigue in the French drama, VIII. 154.
 RICE, XIX. 156; XVII. 630—as food, IX. 759—analysis of, *ib.*—quantity imported, VIII. 735—in Ceylon, VI. 399; China, 588; Bengal, IV. 648; Italy, XII. 639; India, XI. 453; Lombardy, XIII. 655; Madagascar, 792; Nepal, XVI. 142; United States, XXI. 425.

RIC—RID

- RICH (Claudius James), XIX. 157—his account of the ruins of Babylon, IV. 342 *et seq.*; XVI. 273—his collection of oriental MSS., XIII. 392.
 — father and son, managers of Drury Lane Theatre, XXI. 173.
 — and Poor, their duties to each other, XV. 569.
 RICHARD I., king of England, XIX. 157—reign of, VIII. 674—character of, *ib.*—death, 675—his expedition to the Holy Land, 481, 482; VII. 525, 529—his patronage of minstrels, XV. 252—treatment of the Jews, XII. 779; VIII. 675—his fleet, XX. 120—his encouragement to the University of Oxford, XXI. 453—tournaments in the time of, 318.
 — II., XIX. 157—reign of, VIII. 684—his visits to Dublin, 217—his household magnificence, XI. 773—his Irish policy, XII. 472—his fleet, XX. 121.
 — III., XIX. 157—reign of, VIII. 693—his encouragement of players, XXI. 165.
 — DE BURY, XIX. 157.
 — OF CIRENCESTER, XIX. 158.
 — on the roots of plants, V. 76, 77.
 RICHARDSON (Jonathan), portrait-painter, XIX. 158.
 — (H. D.), his work on the honey-bee, IX. 24.
 — (James), his expedition to Central Africa, II. 211; X. 478.
 — (Mr.), of Hull, notice of his works on brewing, V. 319.
 — on Milton, XV. 34.
 — on political economy, XVIII. 219.
 — (SAMUEL), novelist, XIX. 158—his dislike of Fielding, IX. 540 and n. 2—merits of his novels, XIX. 271.
 — (Sir John), on the aurora borealis, IV. 247, 249—on the Wolverine, XIV. 156—on the skunk weasel, 158—on the American field-mouse, 182—on the jir-falcon, XVI. 745—on the Loucheux Indians, XIII. 220—his northern explorations, XVIII. 172.
 RICHELIEU (A. J. Duplessis), cardinal, XIX. 159—his treatment of Cornille, VIII. 149—compared with Mazarin, XIV. 374—minister to Louis XIII., 34—plot for assassinating, XIX. 94.
 Richer on the figure of the earth, IX. 548.
 Riches. See Wealth.
 Richieu (Duke of), X. 174—his cabinet, 175—retirement of, 179—second ministry of, 181—resignation in 1821, 183.
 Richman (Prof.), his death while making electrical observations, VIII. 528—on the Leyden jar, 612.
 RICHMOND, town in Yorkshire, XIX. 165—castle, XXI. 957.
 — in Surrey, XIX. 166; XX. 836, 837.
 — in Virginia, XIX. 166; XXI. 597, 598, 599.
 RICHTER (J. Paul Friedrich), XIX. 166—his novels, 291.
 — on chemical combination, I. 937.
 Ricimer, XIX. 363.
 Ricinus, genus of insects, IX. 262.
 Rickards on the Hindus, XI. 471 *et seq.*—on British exports to India, 461—on the Maliks of India, 512.
 RICKMAN (Thomas), architect, XIX. 168—on pointed architecture, III. 480 *et seq.*—(John), his notice of Telford, XXI. 145—Life of Telford edited by, 146.
 RICKMANSWORTH, in Hertford, XIX. 169.
 Ricochet battery, IV. 511.
 Riddarholms Church, in Stockholm, figures and relics in, XX. 705.
 Riddell (Prof.), his binocular microscope, XIV. 784.
 — on the delta of the Mississippi, XV. 279.
 Riddle, or enigma, II. 162.
 Rideau Canal, VI. 134.
 Ridges, in ploughing, best method of forming, II. 286.
 Ridgway (Messrs), of Horwich, their improvements in bleaching, IV. 759.
 Ridicule, largely employed in the Greek comedy, VIII. 139—a sense of the rid-

RID—RIO

- culous as an incentive to virtue, XV. 564.
 Riding, XI. 672—as an exercise, 170. See Horsemanship.
 Ridinger, engraver, VIII. 809.
 Ridley (Henry), on the anatomy of the brain, II. 764.
 — (NICHOLAS), bishop, XIX. 169; XIII. 247.
 RIDOLFI (Carlo), XIX. 169.
 RIENZI (Nicolo Gabrini de), tribune, XIX. 169, 366, 367; XII. 649; XVII. 497.
 RIESENGEBIRGE, XIX. 171.
 RIESI, village in Sicily, XIX. 171.
 Riess (P.), and Moser, on magnetism, XIV. 13—on solar magnetism, 596.
 RIETI, town in the Papal States, XIX. 171—delegation of, XVII. 243.
 Rieves and Cox (Messrs), their telescopes, XXI. 119.
 Riffault (M.), on voltaic currents, XXI. 628.
 RIFLE, XIX. 171—principle of, XI. 127—American, 101—Minié, *ib.*—Enfield, *ib.*—rifle-shooting, XX. 211.
 Rifle-bird, XVI. 772.
 Riflemen, III. 686.
 RIGA, XIX. 171, 531—Lutheran church at, 529—taken by Gustavus Adolphus, XX. 848.
 — or red pine timber, XXI. 275.
 RIGAUD (Hyacinthe), painter, XIX. 172.
 — (Prof.), on Ptolemy's Optics, XVI. 521—on the use of telescopes in England, 528.
 Rigdon (Sidney), Mormon, XV. 589.
 Rigel, star, IV. 79.
 RIGGING of a ship, XIX. 172—tension of, XX. 180—chain and wire-rope rigging, 23.
 Right Ascension, IV. 3.
 — PETITION OF, XIX. 172; V. 392; XX. 37.
 — TITLE, XIX. 172.
 Right and wrong. See Ethical Philosophy, Moral Philosophy, Conscience.
 — in law, XIII. 255.
 RIGHTS, XIX. 172; XIII. 274—of nations, in time of peace, 282; in time of war, 285—offences of the press with regard to private, 360—means of preventing the violation of, by the press, 262—the Economists on, VIII. 376—municipal rights, 781.
 — of Man, French declaration of, X. 54, 62—Society of, 208—Paine on, V. 543; XVII. 45.
 — BILL OF, XIX. 173.
 Rigidity of timber, XX. 172.
 Rigveda. See Vedas.
 Rime, hoar-frost, VII. 765—frost-rime, XI. 42.
 Rimella, fossil mollusks, XVII. 109.
 RIMINI, XIX. 173; XVII. 241.
 Rimula, fossil mollusks, XVII. 111.
 RINCON (Antonio), painter, XIX. 173; XVII. 75.
 Ring-ouzel, XVI. 751.
 Ringbone, XXI. 558.
 Ringdove, XVI. 793.
 Ringent corolla or Calyx, V. 124.
 Ringicula, fossil mollusks, XVII. 111.
 Rings, in optics, produced by crystals, XVI. 651, 652.
 RINGWOOD, in Hampshire, XIX. 173.
 RINGWORM, XIX. 173; XVII. 697.
 Rinuncini (Archbishop), XII. 483.
 Riobamba, town in Ecuador, VIII. 388.
 RIO DE JANEIRO, XIX. 174; V. 281, 295—climate of, II. 673; V. 293—population, 295—vegetable productions, 293—European emigrants in, 295—sciences taught in, 297—commerce, 299—attack of the French on, 282—settlement of, 280, 281—library at, XIII. 431.
 — GRANDE, river, XIX. 175.
 — del Norte, Mexican river, XIV. 715, 729; XVII. 604.
 — DO NORTE, province of Brazil, XIX. 176; V. 295.
 — DO SUL, province of Brazil, XIX. 176; V. 295.
 — Negro, XVI. 130. See Negro (Rio).

RIO—ROA

- RIOJA, in La Plata, XIX. 176; XVII. 779.
 Riolan, physician, XIV. 460.
 RIOM, town in France, XIX. 176.
 RIONERO, town of Naples, XIX. 176.
 Riots, discussion, in 1780, on the mode of quelling, V. 493.
 Riouw, in East Indies, XIX. 145.
 Ripidolite, mineral, XV. 78.
 Ripiphorus, genus of insects, IX. 133.
 RIPLEY, town in Yorkshire, XIX. 177.
 RIPPON, town in Yorkshire, XIX. 177; XXI. 959.
 RIPPERDA (J. William), baron of, XIX. 177.
 Ripple-marks on rocks, XV. 159.
 Rippling of flax, XIII. 494.
 Rishis, ancient lectures on medicine, XIV. 450, 457.
 Risings, castle, VIII. 682.
 Risso (M.), on birds, XVI. 731.
 Ristigouche, river, XVI. 163.
 Rita, genus of fishes, XII. 262.
 Ritchie (Dr W.), on electricity, VIII. 540—his photometer, XIII. 455; XVII. 555—his torsion galvanometer, XXI. 642.
 Ritschl on Plautus, XVIII. 2, 3.
 RITSON (Joseph), XIX. 177—on the minstrels, 257—his attack on Warton's History of English Poetry, XXI. 735.
 RITTENHOUSE (David), astronomer, XIX. 178.
 Ritter (J. D.), his edition of the Theodosian Code, VI. 744.
 — (J. W.), on the prismatic spectrum, I. 921; XIII. 452—on the influence of magnetism on chemical action, XIV. 41—on the sun's rays, XVI. 536—on the effects of galvanism upon the eye, XXI. 634.
 — on Hindu philosophy, XVII. 230, 231, notes.
 Rittingerite, mineral, XV. 112.
 Ritual, Egyptian funeral, VIII. 441.
 RIVA, town in the Tyrol, XIX. 178.
 Rivarol on the causes of the French Revolution, X. 48.
 Rive (de la). See Delarive.
 RIVE-DE-GIER, town in France, XIX. 178.
 RIVER, XIX. 179; X. 483; XVII. 600—courses and slopes of, 601; XVI. 78—theory of rivers, I. 886—motion of, XII. 70, 71—flow of water in, 141—physical characteristics of, XVI. 57, 87—compartments of, 57—tidal compartments, 63—velocity of their currents, 78—matters suspended in, 86—discharge of, 87—velocity and inclination of, XII. 145; XVII. 601—embankments of, VIII. 646—straightening the course of, *ib.*—rights of different nations respecting, XIII. 285—action of, on rocks, XV. 140—deposits at the mouths of, *ib.*, 141, 217; XVI. 86; XVII. 586—lengths of, &c., 646—with subterranean courses, 601—great number and magnitude of navigable rivers in America, II. 675—none of the first-class flow westward, 676—African rivers, 213, 214; XVII. 607—Asiatic, III. 733; XVII. 606—dredging of, XVI. 68—European rivers, IX. 384; XVII. 605. See Delta, Navigation (Inland), and the geographical articles.
 River-mists, XIV. 654.
 River-walls, XVI. 71.
 River-weed order of plants, V. 207.
 Rivers (Mr), on the culture of pears, XI. 714—his orchard houses, 724.
 Rivetting of iron plates, XX. 176, 195—rivetting machine, 177.
 Riviera, XIX. 633, 634.
 RIVOLI, Italian city, XIX. 223—battle of, X. 104; XV. 790.
 Rixdollar, XV. 443, 444, 445.
 RIZI (Francisco), Spanish painter, XIX. 223.
 RIZZI (Sebastiano). See Ricci.
 Rizzio, or Riccio, murder of, XIX. 784.
 Rjazan, in Russia, XIX. 151.
 RJEV, Russian town, XIX. 223.
 Roach, XII. 256—angling for, III. 161.
 ROAD, in navigation, XIX. 233; X. 483.
 ROAD-MAKING, XIX. 223—roads in China, II. 688—Peru, 685, 688—England, VIII.

ROA—ROB

- 722—France, X. 244—Palestine, XVII. 191 and *n.*—Russia, XIX. 486—Scotland, 807—Ireland, XII. 528—Isle of Man, XIV. 245—bridges now used for raising the level of, III. 339—of the sixteenth century, VII. 188—embankments to serve as, VIII. 646—road over the Simplon, II. 624, *n.*; XIX. 228; XX. 298—Roman military, XIX. 308—of the Two Sicilies, XX. 250—of Spain, 491—Sweden, 864—United States, XXI. 427—in landscape gardening, XVII. 773—repair of roads by contributions of labour, XXI. 43—steam-carriages on, I. 884—carriage roadway, III. 493. See Highways.
- ROANNE, town in France, XIX. 229.
- Roard (M.), on the varnish of silk, IV. 769, 770.
- Roaring, a disease of the domestic animals, XXI. 571.
- Roasting, IX. 765—loss sustained by animal food by, 766.
- Robbery, honourable in Arabia, III. 349—a profession in India, XI. 520; XXI. 818—of mail-coaches, XVIII. 407.
- Robbia (Luca della), his porcelain, XVIII. 432, 433—his sculpture, XIX. 860.
- Robell (M.), his process of galvanography, XXI. 636.
- Robert de Belesme, VIII. 669.
- the Devil, VIII. 664.
- (Eugene), his work on the silk-worm, IX. 23.
- OF GLOUCESTER, XIX. 229—his rhyming description of Ireland, VIII. 794.
- king of France, XIX. 229; X. 12.
- I., king of Scotland. See Bruce.
- II. and III., kings of Scotland, XIX. 229, 757.
- (LEOPOLD), XIX. 229.
- Robert's analysis of pale Indian and Scotch ales, V. 334.
- Roberts (Captain Julius), his mortar, XI. 142.
- (Lewis), on the trade of Manchester in 1641, VII. 440.
- Robertson (Mr), on the mortality of children, XV. 614.
- (Mr), on the excavations of the Pholus dactylus, XV. 354.
- (Dr WILLIAM), XIX. 229—on the balance of power, IV. 390—on the beneficial effects of the Crusades, VII. 527—on Indian chronology, XII. 789—sum paid for his History of Charles V., 802—Gilbert Stuart's enmity to, XXI. 783.
- Robertson's patent robes, XIX. 410.
- Roberval, IX. 671—originality and mathematical genius of, I. 555—claimed the discovery of the area of the cycloid, *ib.*—improved the method of quadratures, *ib.*—his disputes with Descartes, VI. 279.
- ROBEVALLIAN LINES, XIX. 233.
- Robes, mistress of the, XI. 776.
- ROBESPIERRE (F.-M.-J.-Isidore de), XIX. 233; X. 69 *et seq.*—his power, 89—downfall and execution, 91, 92—denounced by Tallien, XXI. 14. See Danton.
- Robin Hood, XV. 599.
- Robineau-Desvoidy, his works on insects, IX. 14.
- Robinet, on the formation of dendrites, VII. 550.
- Robinia viscosa and pseud-acacia, XVII. 762, 759.
- ROBINS (Benjamin), XIX. 235—sketch of his life, writings, and contributions to mathematics, I. 717, *n.* 1—his essay on Prime and Ultimate Ratio, 718, *n.* 1—his method of determining the impulse of balls, 726—on Leibnitz's law of continuity, 133, *n.* 1—his defence of the Newtonian calculus, IX. 676—on gunnery, XI. 103, 107 *et seq.*—his experiments on the resistance of the air, XVIII. 114; XX. 4, 11—on Euler's overweening confidence in analysis, 771.

ROB—ROC

- ROBINS or Robyns (John), astronomer, XIX. 235.
- filter, IX. 582.
- Robinson (Dr), on the site of Capernaum, VI. 206—on Idumæa, XII. 158, 159—on the topography of Jerusalem, 735 *et seq.*—his estimate of the population of Jerusalem, 747—on the passage of the Israelites through the Red Sea, XVIII. 819.
- (Dr), of Armagh, his experiments in voltaic electricity, XXI. 627.
- (John), Independent, XII. 368.
- (Prof.), on gunnery, XI. 119, 129, 131 *et seq.*
- (ROBERT), Baptist minister, XIX. 236.
- ROBISON (Prof. John), XIX. 237; I. 871—as a practical philosopher, 870—as an expositor of science, 871—his friendship with Watt, *ib.*—his adventures, *ib.*—his appointment to the University of Edinburgh, *ib.*—his articles in this work, *ib.*—his mechanical philosophy, 872—on electricity and magnetism, *ib.*—his knowledge of mathematics, *ib.*—as a lecturer, 873—his philosophical character, *ib.*—his steam-carriage, 881—anticipation of Volta's pile by, 963—on the arch, III. 415—on the construction of bridges, V. 358, 360, 361—his article in this work on Carpentry, VI. 249—on the electric shock, VIII. 602—on magnetism, XIV. 5, 14, 22, 24, 25—on theories of harmony, XV. 702—on musical intervals, 705—on the strength of ropes, XIX. 402—his article River, in this work, 179, *n.*—his theory of roof, 374—his article Seamanship, in this work, XX. 18—on steam, 554, 557.
- Robley (Mr), his culture of the bread-fruit, V. 301.
- ROBSON (George Fennel), painter, XIX. 240.
- Rocambole, plant, XI. 741.
- Roccamonfina, XX. 236.
- Rocella, lichen. See Archil.
- ROCHDALE, in Lancaster, XIX. 240—failure of the saving's bank at, 664.
- Roche (de la). See Delaroche.
- Abbey building stone, XX. 712.
- ROCHEFORT-SUR-MER, town in France, XIX. 241—pillage at the dockyard of, X. 227—British expedition against, V. 463.
- ROCHEFOUCAULD (François), Duke de la, XIX. 241—influence of his writings, I. 54, 55, 56—Johnson's and Voltaire's opinions of, 54, 55—manner in which he polished his writings, 54—tendency of his maxims unfavourable to morality, *ib.*—excellent private character of, 55—narrow sphere in which he studied mankind, *ib.*—reasons why his name should be united with Montaigne's, *ib.*
- ROCHELLE (La), town in France, XIX. 241—salt, VI. 515—surrender of, in 1628, XIX. 164.
- ROCHESTER, in Kent, XIX. 241—population XIII. 67—foundation of the piers of the new bridge at, XX. 723.
- town in New York, XIX. 242.
- (Earl of). See Wilmot.
- Rochon (Abbé), his micrometers, XIV. 750, 751, 752.
- Rock-alum, II. 637.
- Rock-cork, XV. 81—leather, *ib.*—wood, *ib.*
- Rock-crystal, XV. 69—circular polarisation in, XVI. 676—mines of XV. 246—refraction of XVI. 659—dichroism in, 666—abundant in Lapland, XIII. 234—as a plate for the knife-edge of pendulums, XVII. 383.
- Rock-elm, XXI. 276.
- Rock-goat, XIV. 211.
- Rock-oil, XVI. 493.
- Rock-rose order of plants, V. 183.
- Rock-salt, XV. 96, 145, 148; XVII. 623—its wonderful transparency for heat, I. 955. See Salt and Salt Mines.
- Rock-sheep, XIV. 213.
- Rock-soap, XV. 83.
- Rock-work, in gardening, XI. 747.
- ROCKET, XIX. 242; XI. 142; XVIII. 707;

ROC—ROG

- III. 698—their use in cases of shipwreck, XIII. 441, 445.
- Rocking-stones, VIII. 187; XV. 166—in Devonshire, VII. 764. See Logan-stones.
- Rockingham (Marquis of), his administration, V. 501; IX. 851—his patronage of Burke, V. 775.
- forest of, XVI. 297.
- Rocks, composition of, II. 390, 391—blasting of, IV. 755—boring of, V. 44—stratified arrangement of, 233; derived from the crystalline, XVII. 619—origin and classification of, XV. 129, 155—igneous, 131—volcanic, *ib.* 190—trappean, 134—granitic, 136—aqueous, 139—chemical and organic, 141—aerial, 150—metamorphic, 130, 150, 153—mechanically-formed, 139—in landscape gardening, XVII. 773—ancient volcanic, XXI. 606.
- ROCKY MOUNTAINS, in North America, XIX. 242; II. 674; XVII. 594, 645; XXI. 420—goat and sheep of the, XIV. 211, 213.
- Rocou, VIII. 296.
- Rocquancourt, aqueduct of, III. 336.
- Rocroy, in France, XIX. 243.
- Rod, fishing, III. 150, 152.
- a measure, V. 736.
- discharging, in electricity, VIII. 611.
- Rodentia, XIV. 177, 135; II. 774; XVII. 632—their bones, III. 76 *et seq.*—muscles, 91—organs of smell, 94—nervous system, 103—intestines, 110, 111—odontology of, XVI. 453; III. 106—of America, II. 713.
- Roderick, king of the Goths in Spain, XX. 460.
- RODEZ, in France, XIX. 243.
- Rodger (Lieut.), his life-raft, XIII. 439.
- Rodgers (Mr), on preserving timber from dry rot, XVI. 99.
- anchor, III. 118, 119; XX. 24, 25.
- Rodier (M.), on the composition of the blood, XVII. 664.
- Rödiger (Ænilius), philologist, XVII. 533.
- Rodill (General), XX. 478.
- RODNEY (George B.), Lord Rodney, XIX. 243; XX. 132—his defeat of the Spaniards, V. 493—De Grasse defeated by, 500.
- RODOSTO, Turkish town, XIX. 244.
- RODRIGUES, or Rodrique, island, XIX. 244; XIV. 364.
- Rodriguez (Manuel), on the Amazon, XVI. 81.
- Jesuit, XII. 752.
- ROE, XIX. 244—of the salmon, as a bait, III. 156. See Ova.
- deer, XIV. 208—hunting of, XII. 40—fossil, XVII. 171—a pairing animal, III. 181.
- river, XIII. 680.
- Shetland islands, XX. 113.
- Roe-stone, XV. 146. See Oolite.
- Roebbling (Mr), his suspension bridge over the Niagara, XII. 590.
- ROEBUCK (John), XIX. 244—site of the Carron iron-works selected by, XX. 702.
- ROEMER (Olaus), XIX. 245—on the successive propagation of light, I. 614; II. 35; IV. 74; XVI. 534—his astronomical labours, III. 802—on thermometers, IV. 457—his transit instrument, 152—his thermometers, XXI. 221—on the micrometer, XIV. 745, 747.
- (J. Charles), his works on insects, IX. 8.
- ROERMONDE, in Limburg, XIX. 245.
- Roesel, his work on insects, IX. 4.
- Roeslerstamm, his works on insects, IX. 14.
- ROGATION-WEEK, XIX. 245.
- Rogenia, genus of fishes, XII. 237.
- Roger, king of Sicily, XX. 257, 263—silk introduced into Sicily by, VIII. 276; XX. 292.
- ROGER-DE-HOVEDEN, XIX. 245; XI. 779.
- ROGER-DE-WINDOVER, XIX. 245.
- ROGERS (Samuel), English poet, XIX. 245.
- (M.), his dialytic telescopes, XXI. 122, 123.

ROG—ROM

- Rogers' boiler for hot-houses, XI. 722.
- (Prof. H. D.), on faults in rocks, XV. 176—on the silurian rocks of North America, 197—on the carboniferous rocks of United States, 204—fossil reptiles discovered by, XVII. 133.
- (Woodes), XVIII. 269.
- Roget (Dr), his Bridgewater Treatise, V. 364—on magnetic curves, XIV. 46, 47—his galvanoscope, XXI. 642—on medusæ, 996.
- Roggewein (Jacob), his voyages to the Polynesian islands, XVIII. 277, 279.
- Rogie, Falls of, XIX. 426.
- Rogniat (M.), on the Roman knights, III. 633.
- Rogue-money, VII. 467.
- ROHAN (Henri, Duc de), XIX. 248.
- arms of the family so named, XI. 330, *n.*
- ROHAULT (Jacques), Cartesian philosopher, XIX. 249—Dr Clarke's translation of his Physics, VI. 757.
- ROHLICUND, XIX. 249; XVI. 301; XVII. 21.
- Rohillas, XI. 480—Warren Hastings' treatment of, V. 520; XI. 490; XIX. 249.
- Rohita, genus of fishes, XII. 257.
- Rohrl. See Roree.
- ROLAND (M. J. P.), XIX. 249—her character of Condorcet, VII. 238.
- (Mr), on fencing, IX. 503, 504.
- ROLLE (Michel), mathematician, XIX. 250—his objections to the differential calculus, I. 649; IX. 673.
- Rollers, agricultural, II. 273—used in coining, VII. 89, 90—printer's, XVIII. 547, 548.
- birds, XVI. 765.
- Rollet (M. Brun), on the White Nile, XVI. 271.
- ROLLO (Paolo Antonio), Italian poet, XIX. 250.
- ROLLIN (Charles), XIX. 250.
- (Ledru), X. 218, 223, 230, 338.
- Rolling of a ship, XX. 153 and *n.* 1—cause of, 161—influence of form on, 162.
- Rolling-mills, in iron manufacture, XII. 561—in silver coining, VII. 89, 90.
- ROLLO, XIX. 251; VIII. 664.
- (Dr), his manner of treating diabetes, VIII. 24.
- ROLLOCK (Robert), of Edinburgh, XIX. 251; XXI. 482.
- Rollox (St), chemical works of, X. 650.
- Rolls, Master of the, XVIII. 816.
- ROMA (Comarca di), in the Papal States, XIX. 252.
- ROMAGNOSI (G. Domenico), XIX. 252.
- Romaic language, XI. 22; XIII. 210.
- Romain, aeronaut, death of, II. 179.
- ROMAINE (William), English divine, XIX. 252.
- Roman Catholic Church, the world indebted to, for much of its present enjoyments, I. 14—the opposing of revelation to reason its most objectionable tenet, 21—its corruptions of Christianity in the sacrifice of the mass, 512; in the worship of images and saints, *ib.* 514—abuse of keeping the Scriptures and conducting public worship in a dead language, 527, 528 and *n.* 2—disproof of the unchangeable character of, 528, *n.* 1—its infallibility, 531, 532—orders in, VIII. 115, *n.* 5—celibacy of its clergy, VI. 362; policy of that measure, I. 527, *n.* 2—separation of the Greek Church from, XI. 34—points in which the Greek Church differs from, 35—European nations belonging to, IX. 394—funeral rites in, X. 344—ordination, XVI. 703—differences of the Greco-Russian Church from, XIX. 527—in Russia, 529—its missions, XV. 275—mass, XIV. 339—sacraments, XIX. 567—doctrine as to the Lord's supper, I. 512; and purgatory, XVIII. 695—indulgences, XII. 377; sale of, XIII. 724—churches in England and Wales, VIII. 745; in Scotland, XIX. 801—hierarchy in Ireland, XII. 532. See Popery, Pope, Reformation, Luther.

ROM—ROM

ROMAN CATHOLICISM, XIX. 252.

— Catholics, in Canada, VI. 158—
Ireland, XII. 475 *et seq.*—Austria, IV.
317—Bavaria, 519—Belgium, 616—Scot-
land, V. 549; XIX. 801—their demon-
ology, III. 211—Paganism mingled with
their doctrines, *ib.*, n. 2, 314—riots
against, in 1780, V. 491—Mr Pitt on
their emancipation, 578—measures in
Parliament for their relief, 490, 538,
549, 624, 625, 631, 638, 640, 652; XII.
500; Sir Robert Peel's part in, XVII.
363—Emancipation Act passed, V. 656—
Irish Catholic Association, 641, 642,
647, 653; XII. 501—suppressed, V. 655
—Catholic Board and Committee, XVI.
403; XII. 501—none executed in Ed-
ward the Sixth's reign, VIII. 710—penal
laws against Irish, XII. 492, 493; par-
tially repealed, 497—in England, VIII.
744, 745—number of, in the different
European states, IX. 395—Germany,
X. 588—Holland, XI. 588—places of
worship and schools, in London, XIII.
666—collision between the Catholics
and Protestants in Scotland, in 1558,
XIX. 780—their intrigues in favour of
Queen Mary, 788.

— cement, V. 742—plastering with,
744—decay of, on walls, *ib.*—its power
of resisting compression, XX. 715.

— HISTORY, XIX. 294; XI. 542, 543
—Invasion of Arabia, III. 362—capture
of Athens, IV. 172—conquests in Brit-
tain, V. 376 *et seq.*—wars with the Car-
thaginians, VI. 286 *et seq.*—Constantino-
politan history, VII. 302—occupation of
Corinth, 368—wars with the Cimbri,
VI. 723—conquest of Crete, VII. 496—
emigrations of northern nations by
whom the empire was overthrown,
VIII. 650; X. 455, 576, 577—empire,
VIII. 653—conquests in Germany, X.
574 *et seq.*—conquest of Illyria, XII.
364; Judaea, 770; XVII. 194; Mace-
donia, XIII. 775; Pergamus, XVII.
410; Palmyra, 221—Spain, XX. 457—
wars with the Parthians, XVII. 310
et seq., 435; Persians, 435; Mithridates,
XV. 284; XVIII. 292; with the Goths,
X. 727—Niebuhr's Roman History,
XVI. 257, 259, 261; XI. 546—Gibbon's
Decline and Fall of the Roman Empire,
X. 611 *et seq.*; XI. 540, 548—Ferguson's
History of the Roman Republic, IX.
511—Sir G. C. Lewis on the Credibility
of early Roman History XVI. 261—
Helvetia subjected, XX. 883—Syria
under the Roman rule, 904, 910, 911—
wars with the Syracusans, 900—war
with the Tarentines, XXI. 22. See the
Chronological Table, VI. 678 *et seq.*

Roman-candle, XVIII. 708.

ROMANA (Don P. Caro y Sureda), general,
XIX. 252.

ROMANCE, XIX. 253—of the age of chi-
valry, VI. 622 *et seq.*—Persia the birth-
place of, XV. 763—three cycles of,
XVIII. 108—old French, 115—Egyp-
tian, VIII. 442—romantic sagas of Ice-
land, XIX. 690—writers of Sweden, 701
—languages, XIII. 528, 532.

Romand (Bal. E. de), his work on insects,
IX. 21.

Romano (Giulio), Italian painter, XVII.
69. See Giulio, Romano

— town in Italy, XIX. 354.

Romans, their notions respecting a future
state, I. 459—their acclamations, II. 77
—abacus, 6—posture during meals, 80
—action at law, 118—adoption, 149—
adoration, 150—mode of punishing
adultery, 155—advocates, 157—ædiles,
159—æs, 185—agrarian laws, 245—agri-
culture, 250; XVIII. 212—altars, II. 631
—ambassadors, 652; XIII. 316—ana-
tomical knowledge, II. 751, 752—demon-
ology, III. 310—apprenticeships un-
known to, 326—first employed the arch
extensively, 443, 469—carpentry and
joinery, 445—domestic architecture, 457
—theatres, 470—palaces and villas, *ib.*
—numerals, 572; VI. 418—army, III.

ROM—ROM

629—armour, 632—artificers, 682—au-
gurs, IV. 240—banqueting rooms, 421—
their mode of voting, 399—basilicæ, 485
—baths, 499, 505; III. 470—beards, IV.
527—dining-couches, 564—bricks, V.
342; XVIII. 431—burials, V. 773—burn-
ing of the dead, 795—burying-places,
VI. 22—calendar, 76 *et seq.*, 665, 666—
camps, 122—candidates, 170—caps, 205
—camps in Britain, 327; XIII. 90;
VIII. 251; other remains there, 268—
encouragements to marriage, VI. 362—
chariots, 422—cock-fighting, VII. 50—
law (see Civil Law)—coins, 67; XV. 432,
436; XVI. 351, 353, 356, 381—colonies,
VII. 135—collegium, 113—comitia, 182—
tribes, 183—commerce, 186—mines, 188
—concubinage, 229—crowns, 522, 523—
dancing, 645—decimviri, 690—their
opinions on dew, 765—dials, 775—dicta-
tors, VIII. 8—divorce, 67—drama, 141
—dumviri, 270—dyeing, 273—their ac-
quaintance with silk, 276—standard of
the eagle, 366—Egypt under, 472, 474
—feasts, IX. 494—knowledge of ethno-
logy derived from, 342—sword used by,
502—feudal system, 520—exposure of
children, 457—their possession of Gaul,
X. 1—gambling, 394—funeral rites and
orations, 344—geographical discoveries,
463—mathematical knowledge, 503—
festivals and sacrifices to the dead, 509,
513—gladiators, 640; VIII. Plate—
beast-fights, X. 399—glass-manufacture,
657—gymnasia, XI. 168—gynæcea,
170—treatment of the hair, 182—trade
with India, 460—horsemanship, 673—
hunting, XII. 32—hydrostatical know-
ledge, 70—their treatment of the sur-
mullet, 279; and the murena, 230—
informers, 380—insurance, 393—rate of
interest, 428—irrigation, 621—religious
toleration, 772—libel, 356—libraries,
XIII. 385—acquaintance with the effects
of light, 449—lotteries, 696—language
(see Latin Language)—medical jurispru-
dence, XIV. 422—origin and develop-
ment of medicine among, 453—sources
of gold to, XV. 231—monarchy, 412—
census, 600—mourning, 668—municipal
system, 680—mythology, 766—educa-
tion, 808—nobles, XVI. 280—oaths, 399
—their canals in England, 54—paint-
ing, XVII. 58, 67, 69—pantomime, 238
—parasites, 270—philology, 519—poe-
try, XVIII. 103—neglect of trade and
political economy, 212—posts, 402—pon-
tifex, 292—punishments, 565—provinces,
646—primogeniture, 516—stamps, 521—
law regarding rape, 806—roads, XIX.
228, 308; in Britain, IV. 666; in Scot-
land, 741, 742—period of their rule in
Scotland, 741—sanitary measures, 602—
sculpture, 858 *et seq.*—shipping, XX.
117, 118—shoes, 208; VI. 68—senate,
XX. 43—slavery, 319—their imperfect
acquaintance with the power of steam,
573—shorthand writing, 675—incanta-
tions resorted to for the cure of diseases,
812—their masonry, 710—knowledge
of sugar, 791; of surgery, 812 *et seq.*—
suicides, 799; laws against, 801
—triumphs, XXI. 354—measures, 804;
VII. 230—weights, XXI. 806—wines,
882. See Roman History, Rome, Latin
Language.

ROMANS, The Epistle to the, XIX. 354.

— French town, XIX. 355.

ROMANUS I. (Lecapenus), Emperor of the
East, XIX. 355.

— II., XIX. 355.

— III. (Argyrus), XIX. 355.

— IV. (Diogenes), XIX. 355; VII.
315—his war with the Turks, II. 604.

Romanzowite, mineral, XV. 85.

Romas on the electrical nature of light-
ning, VIII. 582; XIV. 660.

ROMBOUTS (Theodore), Flemish painter;
XIX. 356.

ROME (Ancient), XIX. 356—destitute of
academies, II. 60—amphitheatres in,
729; III. 469—aqueducts, 333—streets,
471—cloacæ, 443; VII. 2—architecture

ROM—ROO

of, III. 443, 469—built of brick, 444—
quantity of water brought to, 334—
capitol, VI. 219—houses do not appear
to have had chimneys, 555—era of
its foundation, 666—circus, 733—cata-
combs, 330—citizens of, 735—colossi at,
VII. 151—commerce, 186—emigration
from, VIII. 650—libraries, XIII. 384,
433—state of medicine and surgery in,
XIV. 453; XX. 812—drama in, VIII.
141—architectural remains of, III. 470
et seq., 486 *et seq.*—bakers in, IV. 376—
raising the value of coins in, XV. 436
—medical profession and literature in,
XIV. 453—plebeians of, XVIII. 8, 9—
customs duties in, XXI. 63—legacy
duties, 65—plan of, XIX. Plate. See
Roman History, Romans.

ROME (Modern), rise of the modern city,
XIX. 366—site of, 356—Academy of
Lincei, II. 63—Academy of Painting,
68—academies of Belles Lettres, 70—
alum of, 639—aqueducts, III. 337—
dome of St Peter's, 413, 452—architec-
ture of St Peter's, 455, 483, 484; XIV.
738; of the Farnese Palace, III. 452, 479,
485—Pantheon, 469, 470, 484—temple
of Jupiter Stator, 486—centre employed
for the nave of St Peter's, 376—jubilee,
XIII. 14—libraries, 411, 412—coins, XV.
442, 444—school of painting, XVII. 67
—early printing, XVIII. 532—state of
sculpture, XIX. 860 *et seq.*—French oc-
cupation of, in 1849, XII. 659—why it
has become the centre of the Romish
Church, I. 527—railways connected
with, XVII. 245—disturbances at, in
1797, X. 107—measures, XXI. 805—
weights, 806.

Romé d'Isle (M.), on the lines character-
istic of minerals and plants, III. 169—
on crystallisation, VII. 551.

Romeite, or Romeine, mineral, XV. 107.

ROMFORD, in Essex, XIX. 370.

ROMILLY (Sir Samuel), XIX. 370—charac-
ter of, I. 394, n. 2; VIII. 241—his
friendship with Dumont, *ib.*—his objec-
tions to judge legislation, XIII. 269.

ROMNEY (George), painter, XIX. 371.
— (New), XIX. 372—Romney marsh,
XIII. 65, 66; embankments of, VIII.
643.

ROMORANTIN, town in France, XIX. 372.

ROMSEY, town in Hants, XIX. 372.

ROMULUS, XIX. 372, 296—supposed laws
of, VI. 738.

Ronalds (F.), his electrical machine, VIII.
536—his electrical telegraph, 543, 627—
on the electricity of the air, 578—his
pendulum doubler of electricity, 615—
his improvements on electrometers, 622
—his electrograph, 626—his electrical
pistol, *ib.*—his atmospheric conductor,
627—his photographic register, XIV.
666.

RONALDSHAY, island, XIX. 372—South,
XVI. 718—North, 718, 719.

Roncesvalles, battle of, XVIII. 701.

RONCIGLIONE, in the Papal States, XIX.
372.

RONDA, town in Spain, XIX. 372.

Rondani (C.), his works on insects, IX.
22.

Rondelet (Guillaume), ichthyologist, XII.
204; XIV. 124.

— on the contraction and expansion
of wood, XII. 816—his L'Art de Batir,
805; XX. 717, 718.

Roney (Sir Cusack P.), letter of, on
Canada, VI. 145.

RÖNNE, town in Denmark, XIX. 372.

RONNEBURG, in Saxe-Altenburg, XIX. 372.

RONSARD (Pierre de), XIX. 372—character
of his poetry, XVIII. 116.

RONSDORF, town in Prussia, XIX. 373.

ROOD, land measure, XIX. 373.

ROOF, XIX. 373—tile-roofs, V. 735—
slater's work, 745—plumber's work,
755—mode of rendering fire-proof,
XIII. 438, 439—roofing of ships, XVI.
99. See Carpentry.

Rook, bird, XVI. 764—its flesh, IX. 763—
rook-shooting, XX. 216.

ROO—ROS

ROOKE (Sir George), XIX. 400; V. 445—
his capture of Gibraltar, 448.

Rooms, proportion and arrangement of,
III. 488—heating of, by stoves, XX.
739 *et seq.*

Roonhuysen, Dutch accoucheur, XX. 818.

Roos (Lord), case of, VIII. 69.

Root (square and cube), extraction of the,
III. 606.

Root-crops, II. 315.

Roots of plants, V. 76—physiology of, 99—
cause of the formation of, XI. 693—con-
nection between them and the branches,
XXI. 269—seek out the best soil for
themselves, *ib.*—esculent roots, XI. 739;
IX. 760.

ROPE, XIX. 401—Coulomb on the stiffness
of ropes, VII. 462; XIV. 407—strength
of, XX. 756—made of twisted osiers,
II. 688.

Rope-dancer, VII. 646; II. 115; X. 328.

Rope-ladder, XIII. 444.

ROPE-MAKING, XIX. 403—at Woolwich,
VIII. 81; Chatham, *ib.*

Rophites, genus of insects, IX. 199.

Roque (La), his description of the coffee-
tree, VII. 53.

— (SAN), in Spain, XIX. 415.

Roquefavour, aqueduct of, III. 336.

RORER, town in India, XIX. 415; XX.
305.

Rorqual, species of whale, XIV. 235—in
Greenland, XI. 43.

Rorqualus, genus of mammalia, XIV. 234.

ROSA (Salvator), XIX. 415.

Rosaceæ, nat. order of plants, V. 190.

ROSAMOND, XIX. 415; XIII. 638.

ROSARIO DE CUCUTA, XIX. 415; X. 797.

ROSARY, XIX. 415; IV. 526; XI. 749.
See Chaplet.

— collection of roses, XI. 749.

Rosas (General), V. 290, 728.

Roscelinus, of Compiègne, nominalist,
XVI. 284; XVII. 521.

ROSCIUS (Q.), comic actor, XIX. 416; VIII.
142.

ROSCOE (Henry, Robert, and Thomas),
XIX. 419.

— (WILLIAM), XIX. 416—his Life of
Lorenzo de Medici, XIV. 448; of Leo
X., *ib.*—his translation from Aldus, IV.
710—his translation of Lanza's History
of Painting, XIII. 230—on the oppor-
tuneness of the invention of printing,
IV. 709—on Pope, XVIII. 320, n. 2.

ROSCOMMON, XIX. 419—extent of land
under crop, XII. 516—produce of crops,
517.

— (W. DILLON), earl of, XIX. 422.

ROSCREA, town in Ireland, XIX. 423.

ROSE, XIX. 423; XI. 748, 749—rose order
of plants, V. 190—roses of Arabia, III.
345; of Provins, XVIII. 646; Egypt,
VIII. 431—wars of the Roses, 690, 694
—oil of; see Attar of Roses.

— (George), his Act on Friendly So-
cieties, X. 310.

— in heraldry, XI. 326.

— (Sir Hugh), XVI. 310, 313.

— (Stewart), his interview with Mez-
zofanti, XIV. 732.

Rose-colour, in dyeing, VIII. 292.

Rose-quartz, XV. 69.

Rose-window, III. 512.

Rose-wood, in Honduras, XI. 612.

Roseæ, sub-order of plants, V. 191.

ROSEAU, in Dominica, XIX. 423.

Roselite, mineral, XV. 96.

Rosellan, mineral, XV. 79.

ROSELLINI (Ippolito), XIX. 423—on ancient
Egyptian monuments, XI. 409, 431.

Rosemary, plant, V. 202; XI. 745—oil of,
XVI. 497.

Rosemüller on the codices of the Old
Testament, XIX. 832.

ROSEN (F. Augustus), orientalist, XIX. 423
—on philology, XVII. 533.

— (Dr George), on the Ossetian lan-
guage, XVII. 530.

Roseneath, echo at, VIII. 373.

ROSENEAU, in Hungary, XIX. 423.

— in Transylvania, XIX. 423.

Rosenberger on Halley's comet, I. 856.

ROS—ROT

- ROSES, attar of, XIX. 423. See Attar of Roses.
- ROSETTA, XIX. 423; VIII. 497—attacked by the British in 1807, 492.
- stone, VIII. 469; XI. 377—language of, 373—Dr Young's analysis of its inscription, 378—Porson's restoration of the text, XVIII. 369.
- ROSETTI (G. V.), on dyeing, VIII. 273.
- ROSHEIM, town in France, XIX. 424.
- ROSICRUCIANS, XIX. 424; IV. 448; XV. 757.
- ROSLIN. See Resin.
- ROSLIN, XIX. 424—chapel, III. 448; VIII. 408.
- Rosnay (Gaston), on iron bridges, XII. 579.
- ROSS (Andrew), his micrometer, XIV. 761—microscopes, 764, 765, 781—object-glasses, 779, 780.
- (General), V. 617.
- (Sir John), XIX. 424—his arctic voyages, XVIII. 171, 172; X. 473; XI. 40.
- (Sir J. Clark), his antarctic voyage, X. 475; XVII. 584; XVIII. 181; scientific results of, I. 995—magnetic poles ascertained by, 991; XVII. 617—on the temperature of the ocean, VI. 777; XIV. 644—on barometric depression at sea, 667—his northern explorations, XVIII. 172—lieutenant to Parry, XVII. 307.
- (Mr), his photographic process, XVII. 548.
- AND CROMARTY, XIX. 425—vitri-fied forts in Ross, IX. 791, 792—fall of immense hallstones in Ross, XIV. 659—agricultural statistics, XIX. 796, 797, 798—population, 799.
- in Herefordshire, XIX. 424.
- (New), in Wexford, XIX. 424.
- or Roscarbery, in Cork, XIX. 424; VII. 370.
- ROSSANO, town of Naples, XIX. 427.
- Academy of, II. 63.
- ROSSBACH, battle of, XVIII. 653; XXI. 713, 714, 715.
- ROSSE (Earl of), his telescopes, I. 863; IV. 151; XXI. 128—his mode of supporting specula, 130, 131; metals used in forming, 135; polishing, 139.
- ROSSI (Pellegrino), count, diplomatist, XIX. 428.
- (De), on MSS. of the Scriptures, XIX. 837.
- (Pietro), his works on insects, IX. 8.
- ROSSIA, genus of mollusks, XV. 400.
- ROSSIENY, in Russia, XIX. 428.
- ROSSIGNOL (Dr), his work on the lungs, III. 74.
- ROSSWEIN, in Saxony, XIX. 428.
- ROSTAN (M.), on animal magnetism, XX. 427.
- ROSTELLARIA, genus of mollusks, XV. 388—fossil, XVII. 109.
- ROSTOCK, German city, XIX. 428—university of, XXI. 492.
- ROSTORCHIN (Fedor), count, XIX. 428; X. 157.
- ROSTOV, two Russian towns so named, XIX. 428.
- ROSTRA, XIX. 428; X. 838.
- ROSTRAMUS, bird, XVI. 743.
- ROSTRUM of a ship, IV. 526.
- Rot (Dry). See Dry Rot.
- in sheep, XXI. 570.
- ROTA, town in Spain, XIX. 428.
- ecclesiastical court, XIX. 428.
- ROTATION, XIX. 429; VIII. 364; XIV. 387—theory of, I. 824, 825—magnetism of, XIV. 9, 31—electrical, VIII. 554—Atwood on, IV. 234—in gunnery, XI. 129—in plants, V. 68—Foucault's experiment on the rotation of the earth, I. 855; XVII. 388—of a ship, XX. 13, 17.
- of crops, V. 98—advantage of, VI. 525—in Essex, IV. 336—in the lowlands of Scotland, XIX. 798; in Aberdeenshire, ib.
- Rotatory grates, XX. 354.
- ROTHARIS, Lombard king, XIII. 640.

ROT—ROX

- ROTHENBURG, XIX. 444.
- Rother, river, VII. 754.
- ROTHERHAM, in Yorkshire, XIX. 444.
- ROTHERSAY, XIX. 444; VI. 26—climate of, XIX. 795.
- Rothière (La), battle of, X. 166.
- Rothöfite, mineral, XV. 85.
- ROTHSCHILD, commercial house, XIX. 444.
- (Mayer Anselm), XIX. 444.
- (Nathan Mayer), XIX. 444.
- ROTTECK (K. W. Rodecker von), XIX. 444.
- ROTTENBURG, XIX. 445.
- ROTTERDAM, XIX. 445—population, XI. 582—prison, 588.
- Rotula. See Patella.
- ROTUNDA, or Rotundo, XIX. 445.
- ROUBAIX, town in France, XIX. 446.
- ROUBILIAC (L. François), XIX. 446—sculpture of, 864.
- Rouble, Russian coin, XV. 444; XIX. 537, n.
- Roucou, III. 257. See Anotta.
- ROUEN, in France, XIX. 446—population, X. 277—suspension bridge at, III. 491—roof of the Salle des Pas Perdus at, XIX. 392.
- Rouge, VIII. 286.
- Rougé (M. de), on hieroglyphics, XI. 44.
- Rough-cast, V. 744.
- ROULERS, town in Belgium, XIX. 447.
- Rouloul, bird, XVI. 791.
- Roum, coast of, IV. 744.
- See Sivas.
- Round, in music, VI. 332.
- Table, knights of the, VI. 622.
- Towers. See Towers.
- ROUNDELAIR, XIX. 447.
- Roundheads, V. 400.
- Roundman's system of relief to the poor, XVIII. 304.
- Rous (Sir John), V. 500.
- Rouse (Mr), of Leicester, pneumatic experiments of, XVIII. 67.
- Rousey, island, XVI. 718, 719.
- ROUSSEAU (Jacques), painter, XIX. 447.
- (JEAN BAPTISTE), XIX. 447—poetry of, XVIII. 117—his meeting with Voltaire, XXI. 657.
- (JEAN-JACQUES), XIX. 448; VIII. 240—on the origin and history of language, I. 174—merits of his *Emile*, 184; its influence on education, XV. 809—on Robinson Crusoe, VII. 697—his quarrel with Diderot, VIII. 14; with Hume, XII. 5—on the impossibility of proving a miracle, XV. 265—his objection to the right of property, XVIII. 228—character of his romances, XIX. 288—influence of his *Contrat Social* on the French Revolution, 233—Madame de Staël's admiration of, XX. 524.
- Roussette, species of bat, XIV. 147.
- ROUSSILLON, XIX. 450; X. 277.
- Roux (Polydore), on the acrid liquor of ants, III. 265—on birds, XVI. 731.
- Rove and Roving-frames, XX. 510, 511.
- ROVEREDO, XIX. 450.
- Rovettus, genus of fishes, XII. 296.
- Rovezzano (Benedetto da), sculptor, XIX. 860.
- ROVIGNO, XIX. 450.
- ROVIGO, XIX. 450.
- (Savary), Duke of, governor of Algiers, II. 574.
- ROWANDIZ, town in Turkey, XIX. 450.
- ROWE (Nicholas), XIX. 450—dramatic works of, VIII. 164—his dramatic reading, XXI. 172—sums paid for his plays, ib.
- Rowe's diving machine, VIII. 59.
- Rowley (Thomas), Chatterton's forged poems of, V. 705; VI. 431; XXI. 410.
- (WILLIAM), XIX. 451.
- ROWNO, town in Russia, XIX. 451.
- ROXANA, XIX. 451.
- Roxburgh Castle, death of James II. at, XIX. 760.
- (Dr), on the Tusseh and Arrindy silkworms, XX. 289, 290.
- Roxburghe (John), Duke of, sale of his library, XVIII. 532.
- Roxburghiaceæ, nat. order of plants, V. 210.

ROX—RUD

- ROXBURGHSHIRE, XIX. 451—agricultural statistics, 796, 797, 798—population, 799.
- ROXBURY, in Massachusetts, XIX. 456.
- Roxo, cape, XX. 49.
- ROY (General William), XIX. 456—his barometrical measurements, I. 730; IV. 465, 466—measurement of the difference of longitude between Greenwich and Paris, IX. 550—his measurement of the first base of the trigonometrical survey, 653—on the temperature of the air at different heights, VI. 780—his share in the trigonometrical survey of Britain, XXI. 330, 331.
- (M. le), his work on Greek ruins, III. 456—on dew, VII. 767.
- ROYAL, XIX. 456.
- Academies, II. 63 *et seq.*
- Academy of Sciences, Paris—experiments in seamanship undertaken by, XX. 4, 10, 11.
- Agricultural College, X. 680.
- Agricultural Society of England, II. 265.
- Bank of Scotland, XV. 483.
- FAMILY, XIX. 456.
- George, man-of-war, sinking of the, V. 501.
- in gunnery, XI. 141.
- Institution in Edinburgh, VIII. 396—for the encouragement of the fine arts, 397.
- Institution in London, I. 941; XIII. 674; XXI. 230.
- Military College, II. 71.
- OAK, XIX. 456.
- Orders of Knighthood, XIII. 123.
- Society of London, XIII. 674—origin and influence of, I. 47; IV. 452; XIV. 461; XVIII. 25, 33—Sir H. Davy's conduct as president, VII. 672—library of, XIII. 393—experiments on cohesion, XX. 748.
- Society of Edinburgh, VIII. 397.
- ROYER-COLLARD (P. Paul), XIX. 456.
- ROYLE (John Forbes), botanist, XIX. 457—his work on the fibrous plants of India, IX. 657—on Indian hemp, XI. 313.
- ROYSTON, XIX. 457.
- ROYTON, village in Lancashire, XIX. 457.
- Rozier (Pilatre de). See Pilatre.
- RSHEV-WLADIMIROV, in Russia, XIX. 457, 223.
- RUBBER (India), XIX. 457. See Caoutchouc.
- Rubble walls, V. 738.
- Rubellan, mineral, XV. 78.
- Rubellite, mineral, XV. 89.
- RUBENS (Sir Peter Paul), XIX. 457; XVII. 56—character of his pictures, 74; III. 710—his pictures at Antwerp, 287—anecdote of Van Dyck, his pupil, and him, XXI. 520.
- Rubicon, Italian river, XVII. 242—crossed by Caesar, XIX. 325.
- RUBINSK, in Russia, XIX. 460.
- RUBRIC, XIX. 460.
- Rubruquis (Wm. de), III. 753; X. 469.
- RUBY, XIX. 460; X. 447—crystallisation of, VII. 563—oriental, XV. 87; XVII. 623—spinel, XV. 87—Balas, ib.—Almadine, ib.—Ely-rubies, IX. 544—dichroism in, XVI. 666.
- Ruby-blendes, XV. 121.
- Ruby-type, XXI. 401, 402, 403.
- Rucelleri, VIII. 147.
- Rucker (John A.), on the number of collisions at sea, VII. 131.
- Ruckert, German poet, XVIII. 119.
- Rudbeck (Olaus), his discovery of the distinction between the lacteals and lymphatics, II. 761.
- Rudberg (Prof.), on the coefficient of expansion of gases, I. 957 and n. 4—on optics, XVI. 546, 659.
- RUDDER, XIX. 460—its action on a ship, XX. 14, 17, 159—useless in balloons, II. 173.
- RUDDIMAN (Thomas), XIX. 460; VIII. 403; XVIII. 539—on grammar, X. 763 n., 770 n. 2 *et seq.*—his edition of George Buchanan's works, V. 720, 787—Chalmers' Life of, VI. 402.

RUD—RUP

- RUDING (Rogers), XIX. 461—on ancient British coinage, VII. 69, 70 *et seq.*—on the constitution of the Mint, 74—his *Annals of the Coinage*, XV. n. 2.
- Rudolph of Hapsburg, XX. 884; IV. 302.
- Rudolphi on the villi of the ileum, III. 61—on intestinal worms, XXI. 974, 975 *et seq.*
- RUDOLSTADT, XIX. 461, 732.
- Rudyerd (John), XIII. 465.
- Rue (A. de la), his work on insects, IX. 18.
- (CHARLES DE LA), XIX. 461—on Anglo-Norman poetry, VIII. 794.
- (Warren de la), his electric battery, XXI. 613.
- order of plants, V. 188.
- plant, XI. 745.
- RUEIL, town in France, XIX. 462.
- Ruff, bird, XVI. 804.
- Ruffini (Paolo), on equations, IX. 306.
- RUFFO (Fabrizio), cardinal, XIX. 462.
- Ruffus, or Rufus, of Ephesus, his anatomical knowledge, II. 752—his skill in surgery, XX. 813.
- RUFINUS, XIX. 462.
- Rugby school, XIX. 462—Dr Arnold's superintendence of, III. 672.
- in Warwickshire, XIX. 462—savings-bank at, 665.
- RUGELEY, or Rudgeley, in Staffordshire, XIX. 463.
- RUGEN, island, XIX. 463.
- RUGENWALDE, town of Prussia, XIX. 463.
- Ruglen. See Rutherglen.
- Ruhmkorff (M.), his induction coil, XXI. 649—his mode of igniting gunpowder, 637.
- RUHNKEN (David), XIX. 463; XVII. 524.
- Ruins in Syria, XX. 909, 910.
- Rukchu, in Ladak, XIII. 149.
- Ruland (Dr Anton), on the Palatine Library, XIII. 411, n. 1.
- Rule, XIII. 253.
- Rulletos, in engraving, XIV. 734.
- Rulhière (M.), on the partition of Poland, IV. 391.
- Rullion Green, battle of, V. 428.
- RÜLSK, town in Russia, XIX. 464.
- RUM, XIX. 464; IX. 760—manufacture of, VIII. 51; from molasses, XV. 311.
- Island, XIX. 464.
- Rumbling Brig, VI. 749; VIII. 260.
- Rumbold (Sir Thomas), his gains in India, IX. 492—charges against, V. 509.
- RUMFORD (Count), XIX. 464. See Thompson (Sir Benjamin).
- (Madame), I. 941, n. 2.
- Prize, I. 941.
- RUMILI, or Rumelia, XIX. 464—coast and ports of Rumelia, IV. 742.
- Ruminantia, XIV. 202; XVII. 632—bones, III. 76 *et seq.*—muscles, 91—organs of smell, 94—eyes, 97—ears, 98—tongue, 100—nervous system, 103—oesophagus, 108—stomach, ib.—intestines, 110—dentition of, 106; XVI. 466; XVII. 169, 172—fat from, XVI. 493—fossil, XVII. 169—of America, II. 713—Africa, 217.
- Rumker's catalogue of stars, IV. 95.
- Rump Parliament, V. 411; XIII. 165.
- Rumsey. See Romsey.
- RUNCIMAN (Alexander), painter, XIX. 464.
- RUNCORN, town in Cheshire, XIX. 464.
- Runeberg (J. Ludvig), Finnish poet, XIX. 701.
- RUNES, XIX. 464, 689.
- RUNGPOOR, XIX. 464.
- Runic alphabet, II. 615—mythology, VIII. 388. See Danes, Goths.
- RUNJEET SINGH, XIX. 465; V. 667, 669 XI. 509.
- Runn, salt morass in Cutch, VII. 597; XI. 449.
- Runner, in plants, V. 79.
- Running, muscles used in, III. 42.
- Runnymede, VIII. 677.
- Ruolz (M. de), his mode of gilding by electric battery, XXI. 637.
- RUPEE, XIX. 465; XV. 442, 445—lac of rupees, XI. 494, n.—crore of rupees, 494, n.
- RUPERT (Prince Robert), XIX. 465—his military operations in England, 403 *et*

RUP—RUS

- seq.*—Invention of mezzotinto engraving improperly ascribed to, XIV. 733; XX. 270.
- Rupert's drops, XIX. 465; III. 218—electrical flash at the bursting of, VIII. 564—*their power of depolarisation*, I. 912.
- (Prince), metal, XVIII. 516.
- Land, X. 346.
- river, X. 346.
- Rupicola, genus of birds, XVI. 757.
- Rüppell (Dr Edward), on Abyssinia, II. 55, 57.
- RUPPIN (New), town in Prussia, XIX. 465.
- Rupture. See Hernia.
- Ruric, XIX. 469, 474.
- Rusa, genus of mammalia, XIV. 218.
- Ruselius, VII. 316.
- RUSH (Benjamin), physician, XIX. 466; XX. 819.
- common, its fitness for making paper, XVII. 248—rush-bearing, ancient custom in Derbyshire, VII. 756.
- flowering, order of plants, V. 214.
- order of plants, V. 213.
- town in Ireland, XIX. 466.
- Rushton and Eckersley's iron-works, XII. 553.
- RUSHWORTH (John), XIX. 467.
- Ruskin (Mr), on Milton, XV. 23.
- Rusniaks, in Hungary, XII. 11.
- Russel (Dr), on serpents, XIX. 46, 62, 64 *et seq.*
- Russell (Admiral), V. 445.
- (Dr A.), on the plague, XVII. 749.
- (Dr Patrick), on the plague, XVII. 748 *et seq.*
- (John), his account of Beethoven, IV. 590.
- (John Scott), on waves, I. 888; XI. 218—on the motions of vessels and waves, XII. 76—on the tidal wave of estuaries, XVI. 64—on the parabolic profile for breakwaters, XI. 220—experiments on the Forth and Clyde Canal, XX. 136, 137—on the influence of a vessel's shape on her speed, 662—Great Eastern steam-ship built by, 665—yacht Titania built by, 139.
- (Lord John), his measures for obtaining parliamentary reform, V. 632, 635, 637, 657, 660—Reform Bills introduced by, 661—his motion regarding the Irish Church, 664; for a national system of education, 666—prime minister, 670; resignation, 672—his plan of relief to the West Indies, 671—his Life of Lord William Russell, XIX. 467—on the free circulation of books, XIII. 380—his Memoirs of Moore, XV. 533.
- (Mr), his improvement on locks, XIII. 534.
- (Prof.), his air-pump, XVIII. 41.
- (Robert), on the climate and agriculture of Scotland, XIX. 811, 795, 796.
- (WILLIAM), lord, XIX. 467; V. 433.
- (WILLIAM), historian, XIX. 468.
- RUSSIA, XIX. 469; IX. 402—Russian arc of meridian, I. 854—Imperial Academy of Sciences, II. 65—Academy of Arts, 67—American colonies, 707—alphabets, 614—geographical discoveries, XVIII. 170; in North America, II. 465; in Asia, III. 753—settlements and commerce in the Aleutian Isles, II. 464, 465—army, III. 647—Asiatic commerce, 755—policy of, towards Austria, IV. 221; influence with Austria, 320—baths, 506—bibles, 702—Bible Society, 704—commerce and fleet on the Black Sea, 744, 745, 746—armed neutrality, V. 494; VII. 742—designs against France, in 1791, V. 540—trade with Bukhara, 759—commercial intercourse with China, VI. 591—war with the Circassians, 342—Cossacks, VII. 423; VIII. 100—consumption of cotton, VII. 453, 460—Czar, 613—law of copyright in, 359—trade with England, VIII. 732, 733—language, IX. 391; XIII. 214—fairs in, IX. 469—war with Turkey, X. 144—wars with France, 113, 145, 153; V. 565—Napoleon's invasion of, X. 154; XV. 795—relations with France in 1806, X.

RUS—RYE

- 142—French trade with, 259—intrigues of, in the East, 209—Georgia given up to, 568—fur-trade, 347—hemp, XI. 312, 313—crown of, 335—Greek Church in, 34—Jews in, XII. 783—Jesuits expelled from, 756—rate of interest, 432—libraries, XIII. 425—variations of the needle in, XIV. 54, 55—magnetic observations in, 18, 60—domestic manufactures, 282—high price of iron in, 284—Permian rocks of, XV. 205—Pliocene, 215—mines, 231, 236, 239—metallic produce of, 233, 248; XVIII. 462—coins of, XV. 442, 444; XVI. 389—sacerdotal power of the Emperor of, XIV. 459—height of mountains, XVII. 643, 644—rivers, 646, 647—war with Turkey, France, and Britain, 198; XXI. 875; with the Poles, XVII. 146 *et seq.*—with the Prussians, 652—increase of population, 342—postal system, XVIII. 424—navy, XX. 138—animal magnetism in, 445—invaded by Gustavus Adolphus, 848—wars with Sweden, 853 *et seq.*; V. 530—masonry, 711—stoves, XX. 739, 740—proportion of suicides in, 800—consumption of tea in, XXI. 91—wars with Turkey, 370, 371, 373; V. 538—universities, 492—weights and measures, 813—wines, 886—maps of, XIX. Plates.
- Russia, Asiatic, XIX. 547.
- Russian Company, XII. 818; XIX. 473.
- Lapland, XIII. 342.
- Sable, X. 347.
- Russians, their skulls, III. 29—military character, 649—*their relations with Japan*, XII. 699.
- Rust, disease in grasses, V. 172.
- RUSTCHUK, town in Turkey, XIX. 553; VII. 653.
- Rustici, sculptor, XIX. 861.
- Rustre, in heraldry, XI. 330.
- Rutaceæ, nat. order of plants, V. 188.
- Rutela, genus of insects, IX. 123.
- RUTH, book of, XIX. 553.
- (St), General, XII. 491.
- Ruthenium, metal, VI. 499.
- Rutherford (Dr John), his register thermometer, I. 763; XXI. 224—on the ratio of the circumference of a circle to its diameter, X. 532.
- (SAMUEL), divine, XIX. 553.
- Rutherford (Andrew, Lord Advocate), his modification of the law of entail, VIII. 816—his Registration Bills, XVIII. 840.
- RUTHERGLEN, XIX. 554.
- RUTHIN, town in Wales, XIX. 554.
- Ruthven, raid of, XIX. 788.
- Ruthven's water-jet propeller for ships, XX. 661.
- Rutile, mineral, XV. 110—in Perthshire, XVII. 456.
- RUTILIUS LUPUS, Roman rhetorician, XIX. 554.
- NUMATIANUS (Claudius), Latin poet, XIX. 554.
- RUTLANDSHIRE, XIX. 554; VIII. 754.
- RUTNAGHERRY, in India, XIX. 555.
- Rutter (Mr), his galvanoscope, VIII. 572.
- Rutting season of animals, III. 182; XIV. 204—in sheep, II. 348.
- RUTULI, XIX. 555.
- Ruuscher on cochineal, VIII. 283.
- RUYSCH (Frederic), XIX. 555; XX. 818—*anatomical discoveries of*, II. 762, 806—on birds, XVI. 726.
- Ruyschian membrane in various animals, III. 96.
- RUYSDAEL (Jacob), painter, XIX. 556.
- RUTTER (M. Adrian), Dutch admiral, XIX. 556; V. 422, 423, 426; XI. 576.
- Ryacolite, mineral, XV. 70.
- Rycant (Sir Paul). See Ricaut.
- RYDE, in Isle of Wight, XIX. 556; XXI. 862.
- Ryder's forging machine, XII. 564.
- RYE, grain, XIX. 556—*culture of*, II. 212—*as food*, IX. 759—*northern limit of*, XVII. 630—*ergot of*, IX. 324.
- town in Sussex, XIX. 556.
- Ryegrass, II. 323—*saving the seed of*, 331.
- (Italian), *culture of*, II. 327—*for milch cows*, VII. 622.

RYE—SAC

- Ryehouse plot, V. 433; XIX. 468.
- Ryerson (Dr), on education in Canada, VI. 157; XV. 821.
- Ryland on John Bunyan, V. 764.
- Ryland's sheep, XI. 349.
- RYMER (Thomas), XIX. 557—*his dramatic criticisms*, VIII. 163, 164.
- RYOTS, XIX. 557; XI. 518, 519—*of Cutch*, VII. 589—*of Bengal*, IV. 650.
- RYSDRACK (Michael), sculptor, XIX. 557.
- (Peter), painter, XIX. 557.
- Ryssonotus, genus of insects, IX. 128.
- Ryswick, peace of, IV. 303; V. 446.
- Rytina, genus of mammalia, dentition of, XVI. 443.
- Ryzæna, in zoology, XIV. 167.
- RZESZOW, Austrian town, XIX. 557.

S

- S, letter of the alphabet, XIX. 558—in abbreviations, II. 20.
- Saabs, race of Hottentots, IX. 353.
- SAAD-EN-DEEN (M. Effendi), historian, XIX. 558.
- SAADI (Moslîh Eddin), Persian poet, XIX. 558.
- SAALE, river, XIX. 558.
- SAALFELD, German town, XIX. 558.
- Saane, Swiss river, XX. 888; X. 304.
- SAARBRÜCK, Prussian town, XIX. 558.
- SAARLOUIS, Prussian town, XIX. 559.
- Saars (M.), on a species of medusa, XXI. 997.
- SAATZ, Bohemian town, XIX. 559.
- SAAVEDRA FAXARDO (Diego de), XIX. 559.
- (Alvarez de), his visit to Papua, IV. 262.
- Sabæi, III. 361.
- SABARA, town in Brazil, XIX. 559.
- SABATIER (André Hyacinthe), XIX. 559.
- French surgeon, his system of anatomy, II. 767.
- Sabatino, lake, temperature of, VI. 777.
- SABBATH, XIX. 559; I. 467 *n.* 3, 502 *n.*—its observance in England in the reign of James I., V. 384—*play acting on*, XXI. 169.
- Sabbathier (M), his account of the Babylonians, IV. 346.
- Sabbatière (Abbe), X. 43.
- Sabbatini (G.), XXI. 237.
- SABBIONETTA, town in Italy, XIX. 563.
- Sabella, genus of annelides, XI. 291, 294.
- SABELLIUS, XIX. 563—on the Trinity, XXI. 194.
- Sabine (General), his observations on the pendulum, I. 851, 853; IX. 573, 574—his magnetical observations, I. 995; XIV. 18—his magnetic charts, XVII. 617.
- river and lake, XXI. 160, 161.
- SABINI, XIX. 563, 295.
- SABINUS (George), Latin poet, XIX. 564.
- Sable, in zoology, XIV. 154—its fur, X. 347.
- in heraldry, XI. 324.
- island, XVI. 344.
- SABLÉ, town in France, XIX. 564.
- SABLES D'OLONNE (LES), town in France, XIX. 564.
- Sabooa, ruins of a temple at, XVI. 349.
- SABZAWAR, town in Persia, XIX. 564.
- Sacadina, in Borneo, V. 47.
- Saccardo, his work on the silkworm, IX. 22.
- SACCATOO, in Central Africa, XIX. 564; VI. 752. See Sakatu and Sokoto.
- Saccharine principles of plants, II. 379; IX. 755; of animals, 756.
- Saccharite, mineral, XV. 71.
- Saccharometer, V. 319.
- SACCHETTI (Franco), Italian novelist, XIX. 565.
- SACCHI (Andrea), painter, XIX. 565.
- SACCHINI (A. M. Gasparo), musician, XIX. 565.
- Saccobranchiata, order of mollusks, XV. 330.
- Saccobranchus, genus of fishes, XII. 263.
- Sacerdotal stage of Greek medicine, XIV.

SAC—SAG

- 451; of Roman, 453; of modern, 457—*sacerdotal influence in the eighteenth century*, 462.
- SACHEVERELL (Dr Henry), XIX. 566—*Atterbury's exertions in his favour*, IV. 189.
- Sachot (Father), IX. 487.
- SACHS (Hans), XIX. 566.
- SACK, wine, XIX. 566; XXI. 884.
- SACKVILLE (Charles), XIX. 567.
- (Lord), V. 498.
- (Lord George), V. 464.
- (THOMAS), Lord Buckhurst, XIX. 566—*poetry of*, XVIII. 121.
- Sacral vertebrae, III. 76.
- SACRAMENT, XIX. 567; XXI. 219—*under the law*, I. 482; *under the gospel*, *ib.*—*Luther's controversy with the Zwinglians regarding the sacraments*, XIII. 736—*Popish sacraments*, XVIII. 336. See Baptism, Eucharist, Lord's Supper.
- SACRAMENTO, river, XIX. 567; VI. 96—*city*, XIX. 567—*county*, VI. 99.
- SACRED, XIX. 567—*philology*, XVII. 518 522.
- SACRIFICE, XIX. 567—in earliest times, I. 454—*error of introducing into the gospel dispensation*, 510—*priests appointed for*, *ib.*—*Egyptian*, VIII. 439—*Roman*, IX. 510, 513—*sacrifices of the North American Indians*, II. 681—in the Christian Church, derived from Judaism and Paganism, I. 510.
- (Human), XIV. 361—in Ashantee, III. 727—in Dahomey, VII. 620—*by the Druids*, VIII. 184—in India, XI. 470.
- SACRILEGE, XIX. 568—*French law of*, X. 191.
- SACRO-BOSCO (Johannes de), XIX. 568.
- Sacrum, human, III. 6.
- SACY (A. I. Silvestre de), XIX. 568—on hieroglyphics, XI. 378.
- (L. ISAAC LE MAISTRE), XIX. 568; XIV. 100—his French Bible, IV. 701.
- Saddle, XI. 675, 685—*seat in the*, 675 *et seq.*
- Saddle-backs, in coal beds, VII. 117.
- Saddle-galls in horses, XXI. 578.
- Saddlery, exports of, from Britain, XIII. 311.
- SADDUCEES, XIX. 568; VI. 288; XVII. 505.
- Sadi, Persian poet, XVII. 429.
- SADLER (Michael Thomas), XIX. 569.
- (Sir RALPH), XIX. 570, 773.
- (Wm.), aeronaut, death of, II. 179.
- SADOLETO (Jacopo), cardinal, XIX. 570.
- Sa'eed Pasha, VIII. 495.
- Safe locks, XIII. 542.
- Safety-lamp, Sir H. Davy's, I. 969; VII. 124, 671—G. Stephenson's, I. 883.
- Safety-locks for guns, XI. 99.
- Safety-valve, XII. 179. See Valve.
- SAFFI, town in Morocco, XIX. 570.
- Safflower, V. 197—*as a dyestuff*, VIII. 286—*oil from its seeds*, XVI. 495—*quantity imported*, VIII. 735.
- SAFFRON, XIX. 570; V. 212—*as a dyestuff*, VIII. 297—*culture of*, in France, X. 248.
- meadow, V. 213.
- SAFFRON-WALDEN, in Essex, XIX. 570.
- Saga, XVI. 316; XIX. 690—*folk's saga*, 691.
- Sagamen, XIX. 689, 690.
- SAGAN, Prussian town, XIX. 571.
- Sagarelli (Gerhard), III. 806.
- SAGE (Alain René Le), XIX. 571—*novels of*, 286, 287.
- (M. Le), on gravitation, I. 135, *n.* 2.
- plant, V. 202; XI. 745.
- Sagging of ships, XX. 180.
- SAGHALIEN, island, XIX. 572.
- Sagittal suture, III. 24.
- SAGITTA, XIX. 572; IV. 80, 83.
- SAGO, XIX. 572; V. 314—*quantity imported*, VIII. 735—*tree*, II. 660; XX. 804—*false sago*, V. 210.
- Saguins, monkeys, XIV. 143.
- Sagra, genus of insects, IX. 147.
- Sagrides, family of insects, IX. 147.
- Saguinus, genus of mammalia, XIV. 143.
- SAGUM, XIX. 572; XVII. 224.

SAG—SAL

SAGUNTUM, XIX. 572—siege of, by Hannibal, XI. 208; XV. 697—taken, VI. 293; XX. 457.
 SAHARA, XIX. 573; II. 212, 216; XVII. 614—countries of, II. 225—oasis in, X. 365.
 Sahidic version of the Bible, IV. 700; XIX. 839.
 Sahlberg (C. L.), his work on insects, IX. 13.
 Sahlite, mineral, XV. 81.
 Sai, river in Oude, XVII. 15.
 SAIDA, or Said, town in Syria, XIX. 573. See Sidon.
 Saigey (M.), on the earth's ellipticity, IX. 575.
 SAIGON, town of Anam, XIX. 573.
 SAILING, XIX. 573—various methods of, XVI. 7 *et seq.*—on a wind, XX. 125. See Seamanship.
 Sailors, utility of training to, VIII. 25—number employed in British vessels, 739—desertion of, during war, XIII. 288—diseases of, XIV. 442—impressment of, IX. 776; XII. 365; XVI. 106—discipline of, XX. 28. See Navy.
 Sailors' homes, XVI. 119.
 SAILS OF SHIPS, XIX. 573—of windmills, XIV. 417—inapplicable to balloons, II. 173—to set, make, &c., sail, XIX. 573—combination of steam with, XX. 21.
 Salmiri, in zoology, XIV. 143.
 Sainfoin, culture of, II. 329—wild, in Gloucestershire, X. 679.
 Sainovies (John), on the Turanian languages, XVII. 535.
 SAINT, XIX. 573; I. 489—invocation of saints, 514—Popish doctrine of the intercession of, XVIII. 337—modern Egyptian, VIII. 447. See Canonisation.
 Saint's Mountain. See Pir Panjal.
 SAINT-ARNAUD (Leroy de), marshal, XIX. 573, 501, 504. See Arnaud (St), marshal.
 Saint-Croix (Godin de), a French poisoner, III. 330.
 Saint-Cyran on annuities, III. 221.
 SAINT-SIMON (C. Henri), Comte de, XIX. 573; VII. 210—his system, ib. 211. — (LOUIS DE ROUVROX), Duc de, XIX. 575.
 St ANDREWS, XIX. 575. See Andrews, St.
 St ANTONIO, or S. Antao, island, XIX. 575; XXI. 544.
 St CATHARINE'S, in West Canada, XIX. 875.
 St Clair, lake, VI. 137. See Clair (St).
 St GEORGE, island, XIX. 575; IV. 336.
 St Hilaire (Geoffroy). See Hilaire.
 St HYACINTH, in East Canada, XIX. 575.
 St Iago, or San Thiago, island, XIX. 575; XXI. 543.
 St Jago de la Vega, XII. 680.
 St John (Henry). See Bolingbroke.
 — river, XVI. 162, 163.
 St JOHN'S, New Brunswick, XIX. 575; XVI. 164.
 — Newfoundland, XIX. 575; XVI. 171.
 St Just, X. 83 *et seq.*
 St MICHAEL'S, island, XIX. 575; IV. 336.
 St NICHOLAS, or S. Nicolao, island, XIX. 575; XXI. 544.
 Sainte (La Haye), V. 620.
 SAINTES, French town, XIX. 575.
 — (Les), islands, XI. 72.
 SAINTONGE, in France, XIX. 575; X. 277.
 SAIS, in Egypt, XIX. 575; VIII. 497.
 Sakatu, II. 229. See Sokoto.
 Saki, monkeys, XIV. 144.
 Sakkar, town in Oudh, XX. 305.
 Sakkarah, pyramids of, VIII. 501.
 Sal, one of the Cape Verde islands, XXI. 544.
 Sal-ammoniac, II. 719; XV. 99—from distillation of coal, XII. 665, *n.*; X. 433.
 Sala, silver mine in Sweden, XX. 862.
 Salada (Rio), XVII. 777.
 SALADIN, or Salah-ed-Deen, XIX. 576; II. 22; VIII. 480, 481; XVI. 341—his partial conquest of Arabia, III. 363—his friendship for Bohaddin, IV. 811—his war with the Crusaders, VII. 525; XVII. 196—Jerusalem taken by, XII. 735.

SAL—SAL

Salads, IX. 761—culture of, XI. 743.
 SALAHIEH, town in Egypt, XIX. 576.
 SALAMANCA, in Spain, XIX. 576—battle of, V. 611; XXI. 825, 712, 713—university of, 492.
 — in Mexico, XIV. 724.
 Salamanders, XIX. 83—vertebræ of, III. 86—case of one which lived two months without the head, 176—fossil, XVII. 153.
 Salamandridæ, XIX. 82.
 SALAMIS, XIX. 576—defeat of Xerxes at, IV. 200; XX. 500.
 Salang, island, XIII. 20.
 Salano, island, XIII. 20.
 Salanx, genus of fishes, XII. 247.
 Salar ferox, fish, XII. 242—angling for, III. 156.
 Salarian road, XIX. 228.
 Salarias, genus of fishes, XII. 309.
 Salas (La), V. 53.
 Salatis, Egyptian king, VIII. 457.
 SALAYER Islands, XIX. 577.
 Salcey forest, XVI. 297.
 Saldana (Rio), sulphate of alumina from, II. 638.
 Saldanha Bay, X. 711.
 — Duke of, XVIII. 391, 392.
 SALE (George), orientalist, XIX. 577—his version of the Koran, II. 456; XV. 303. — (General Sir Robert), V. 668; XI. 509.
 SALEM, in India, XIX. 577.
 — in Massachusetts, XIX. 577; XIV. 341.
 SALEMI, town in Sicily, XIX. 577.
 Salenia, fossil echinoidea, XVII. 99, 100.
 SALEP, XIX. 577; V. 211.
 SALERNO, town of Naples, XIX. 577; XX. 241—bay of, 240—medical school of, 816.
 Sales, account of, in book-keeping, V. 21. — (St FRANÇOIS DE), bishop, XIX. 578.
 SALFORD, XIX. 578; XIV. 256 *et seq.*—free library at, XIII. 406.
 Saliant, in heraldry, XI. 332.
 SALIC or Salique law, XIX. 578—reformed by Clovis, X. 3—in Spain, XX. 471, 477, 478.
 Salicaceæ, nat. order of plants, V. 207.
 Salicaria, genus of birds, XVI. 756.
 Saliceto (Gulielmus de), XX. 816.
 Salicin, V. 207.
 SALIERI (Antonio), musician, XIX. 578.
 SALII, priests of Mars, XIX. 579.
 Salinas on melody, XV. 715.
 Saline stones, XV. 91—ores, XI. 99—plants, V. 221.
 Salini, or Salina, island, XIII. 502; XX. 246.
 SALINS, town in France, XIX. 579—salt-works of, X. 251.
 SALISBURY, XIX. 579—cathedral, III. 448, 481; spire of the cathedral, 410; XX. 735; arches of, 733—diminished mortality in, owing to sanitary improvements, XIX. 604—railways at, XXI. 879. — Countess of, XIII. 117. — Craggs, Edinburgh, VIII. 393—green-stone of, XV. 190. — Plain, XX. 709—trigonometrical base on, XXI. 331, 334—remeasured in 1849, 332.
 Saliva, III. 50; XVII. 659.
 Salivahana, era of, VI. 766.
 Salivary gland, III. 49.
 Salkeld (Lieutenant), his conduct at the siege of Delhi, XVI. 305. — (Mr Serjeant), on divorce, VIII. 69.
 SALLÉE, in Morocco, XIX. 580.
 Sallenders in horses, XXI. 578.
 Sallin on poisons, XIV. 424.
 SALLUSTIUS (C. Crispus), Roman historian, XIX. 580—gardens of, 359. — circus of, VI. 734.
 SALMASIUS (Claudius), XIX. 580—on baptism, IV. 423—his controversy with Milton, XV. 26.
 Salminus, genus of fishes, XII. 246.
 Salmo, genus of fishes, XII. 237. See Salmon.
 — alpinus, XII. 241—angling for, III. 158.

SAL—SAL

Salmo eriox, XII. 240, 241—its abundance in the Tweed, IX. 616.
 — salvelinus, XII. 241—angling for, III. 158.
 — umbla, XII. 241.
 Salmon, XII. 238; IX. 589—size of adult, 597; XII. 239—varieties of, IX. 596—angling for, III. 151—as an article of food, IX. 763—salted, 607 and *n.*; kippered, 768; preserved in ice, 767—effect of river water on the flavour of the flesh, 608 and *n.* 2—modes of capturing, 617—migrations of, XVII. 635—spinal cord of the, 669—in the Baltic, IV. 404. See Parr, Smolt, Grilse.
 — FISHERIES, XIX. 581—laws relating to, IX. 599, 614—deterioration of, 607—of the Tay, 603 *et seq.*; XVII. 455—Tweed, IX. 606, 607; IV. 680—Forth, IX. 794—Wye, XI. 350—England, VIII. 727—Caithness, VI. 62—Scotland, XIX. 804—of Ireland, IX. 618; their produce, 623. See Fisheries.
 — paste, III. 156, *n.* 1.
 Salmon-roe, as a bait, III. 156.
 Salmon-trout, XII. 240—its flesh, IX. 763.
 Salmonidæ, family of fishes, XII. 237, 245—their geographical distribution, 330, 331—unknown in the Himalayan rivers, XI. 444.
 SALO, town in Lombardy, XIX. 581.
 SALON, town in France, XIX. 581.
 — town in Oude, XVII. 17.
 SALONICA, XIX. 581—shipping of, XXI. 385.
 SALOP, XIX. 582. See Shropshire.
 Salopian ware, XVIII. 437.
 Salpa, genus of mollusks, XV. 335.
 Salpi, lake, XX. 240.
 Salpidæ, family of mollusks, XV. 334.
 Salpingus, genus of insects, IX. 133.
 SALSETTE, island in India, XIX. 582; V. 1, 4; XI. 491.
 Salsify, XI. 740.
 Salso, river in Sicily, XX. 245.
 SALT, XIX. 582; XVII. 623; VI. 485; II. 94—in mineralogy, XV. 96—frigorific power of, VII. 102, 104—crystallisation of, 545, 548—efflorescence of, in various countries, 550—antiseptic virtue of, III. 277—its use in preserving articles of food, IX. 767; VI. 485—its alimentary properties, VIII. 21—a preventive of dry-rot, 211—its effects in dyeing scarlet, 290—its use as a manure, II. 305, 413; and in the manufacture of chloride of lime, IV. 761—mountain of, at Cardona, VI. 236—consumption of, in Britain, VIII. 727—produce of, in England and Ireland, XV. 247—its effects on vegetation, IX. 415—of the Sahara, II. 226—saltiness of the ocean, XVII. 572; of the Dead Sea, III. 762—lake-salt of Russia, XIX. 543.
 — (Mr), on hieroglyphics, II. 608.
 — LAKE, City of the Great, XIX. 588; II. 675—Mormon settlement at, XV. 591.
 — springs, of Cheshire, VI. 528—Droitwich, VIII. 179—Durham, 266—Pennsylvania, XVII. 396—Wurtemberg, XXI. 958—Staffordshire, XX. 530.
 Salt-desert in Persia, XVII. 420—in Khorasan, XIII. 78—Peru, XVII. 472.
 Salt-duty, VIII. 727—in France, X. 251; XXI. 72—India, XI. 528.
 Salt-lakes, XVII. 591.
 Salt-manufacture, VII. 551—of Bavaria, IV. 517—Bengal, 650—Droitwich, VIII. 179—Durham, VI. 266—Assam, III. 764—France, X. 251—Switzerland, XX. 889—on the shores of Solway Firth, VII. 551, *n.* 1.
 Salt-mines, XV. 246—of Afana, II. 439—of Austria, IV. 313—Brazil, V. 299—Berchtsgaden, IV. 660—Cheshire, VI. 528; XVI. 246, 316—England, VIII. 727—Europe, IX. 387—of Bochnia and Wieliczka, in Poland, XVIII. 159—Persia, XVII. 422—Prussia, XVIII. 669—Punjab, 688—Russia, XIX. 517, 542, 543, 550—Wurtemberg, XXI. 938.
 SALTA, province of La Plata, XIX. 588; XVII. 779.

SAL—SAM

Saltair mills, description of the steam-machinery of, XX. 603.
 SALTASH, town in Cornwall, XIX. 588—iron bridge at, XII. 601.
 Saltator, genus of birds, XVI. 751.
 Saltatoria, family of insects, IX. 157.
 SALTCOATS, in Ayrshire, XIX. 588.
 Salter (Mr), on impressions on rocks, XVII. 131, 182.
 — (S. J. A.), on the structure of the teeth, XVI. 410.
 — (T. F.), on trolling for pike, III. 159, 160.
 Salterns, or salt-gardens, XIX. 586.
 Salters and colliers formerly slaves in Scotland, XX. 320.
 Salticus, genus of arachnides, III. 384.
 Saltier, in heraldry, XI. 329.
 SALTILLO, in Mexico, XIX. 589; XIV. 709.
 Salting of food, IX. 767.
 SALTPETRE, or nitre, XIX. 589; XV. 98—cooling with, VII. 101—an ingredient in gunpowder, XI. 151, 152—from the dung of bats, in Java, XII. 704—coloured rings in, XVI. 651, 653; I. 913, 914—as a manure, II. 305—used in preserving flesh, IX. 767—specific gravity of, XII. 89—quantity imported, VIII. 735.
 Salts of iron, process in photography, XVII. 550.
 — in chemistry, VI. 499.
 Saluem, river, V. 778.
 SALUZZO, in Piedmont, XIX. 589.
 Salvador (St), XIX. 589. See San Salvador.
 — island, IV. 366.
 Salvadoraceæ, nat. order of plants, V. 199.
 SALVAGE, XIX. 589.
 SALVANDY (N. A.), comte de, XIX. 589.
 Salvation, doctrine concerning, XXI. 215—means of, 219.
 Salvator's (St), College, St Andrews, XXI. 474—its union with St Leonard's, ib.
 Salvatore de Renzi on the population and mortality of Naples, XV. 624.
 Salvete on meteorolites, XIV. 633.
 Salviani (Hippolito), ichthyologist, XII. 204; XIV. 124.
 Salving of sheep, II. 349, 351.
 SALWEEN, or Saluen, Indian river, XIX. 589; XXI. 151.
 SALZBURG (Duchy of), XIX. 589—city, 590.
 Salzes, mud volcanoes, III. 293.
 SAMAKOV, or Samakoff, in Bulgaria, XIX. 590—iron ores of, XII. 541.
 Samana, XI. 254.
 Samanian dynasty, in Persia, XVII. 437.
 SAMAR, island, XIX. 590.
 SAMARA, XIX. 590—in botany, V. 138.
 SAMARANG, in Java, XIX. 591.
 SAMARICAND, XIX. 591—cultivation of astronomy at, III. 795.
 SAMARIA, XIX. 591; XVII. 182—kings of, 193.
 Samaritan alphabet, II. Plate—language, XIII. 209—Pentateuch, IV. 695; XII. 692; XIX. 839; XVII. 519.
 SAMARITANS, XIX. 591.
 SAMARRAH, Turkish town, XIX. 591.
 Samarskite, mineral, XV. 109.
 Samaveda. See Vedas.
 SAMBAS, town in Borneo, XIX. 592; V. 47.
 SAMBOR, in Austria, XIX. 592.
 Sambucus (John), XII. 19.
 Samen Mountains, in Abyssinia, II. 55.
 Samneh, temples at, XVI. 349.
 Samnite wars, XIX. 304.
 SAMNIUM, XIX. 592.
 Samoan Islands. See Navigators' Islands.
 Samojedic languages, XIII. 217.
 Samolus, plant highly esteemed by the Druids, VIII. 188.
 SAMOS, island, XIX. 592—reduced by the Athenians, IV. 202—coins of, XVI. 376—wine of, XXI. 886.
 SAMOTHRACE, island, XIX. 592.
 Samouelle (George), his works on insects, IX. 16.
 SAMOYEDES, XIX. 593; IX. 345.
 Samphire islands, XIII. 75.
 Samphrey, Shetland island, XX. 113.
 SAMSOON, in Turkey, XIX. 593.

SAM—SAN

SAMUEL, XIX. 593.
 — BOOKS OF, XIX. 593.
 — Bulgarian king, VII. 313.
 Samuelson (Mr), his digging machine, II. 367.
 Sámund Sigfusson, XIX. 689—edda of, ib.
 Samydeæ, nat. order of plants, V. 205.
 SAN FELIPE, in Venezuela, XIX. 598.
 — FELIPE DE ACONCAGUA, in Chili, XIX. 598.
 — FRANCISCO, in California, XIX. 598.
 — JOSE, in Costa Rica, XIX. 622.
 — Juan de Dios, IV. 810.
 — Juan (Fort), Nelson's expedition against, XVI. 132, 243.
 — Juan, in La Plata, XVII. 779.
 — Juan, in the Mosquito Territory, XV. 664.
 — Juan river, II. 711; XV. 663; XVI. 243.
 — LASSURGUL, in Sardinia, XIX. 622.
 — MARINO, XIX. 622. See Marino, San.
 — Martin. See Martin (General San).
 — Martino, sculptor, XIX. 864.
 — MICHELI (Michele), architect, XIX. 622; III. 452.
 — MIGUEL, in Central America, XIX. 622.
 — Paolo Fuori, roof of, XIX. 390.
 — PAULO, in Brazil, XIX. 622—Jesuit's college at, V. 281—gold country near, 292—climate, 293—population of the province, 295.
 — SALVADOR, in Central America, XIX. 623.
 — SEBASTIAN, XIX. 624—taken by the British under Wellington, V. 613; XXI. 826.
 — SEVERO, town of Naples, XIX. 624.
 — VICENTE, town in Spain, XIX. 628.
 San-Benito, XII. 390.
 SAN-JUAN-DE-LA-FRONTIERA, XIX. 622.
 SAN-LOUIS, in La Plata, XIX. 622; XVII. 779.
 — POTOSI, in Mexico, XIX. 622; XIV. 718, 726.
 SAN-LUCAR, in Spain, XIX. 622.
 SANA, town in Arabia, XIX. 594; III. 355.
 Sanadine, mineral, XV. 70.
 SANADON (Noel Etienne), Jesuit, XIX. 594.
 SANCHEZ (Francisco), classical scholar, XIX. 594.
 — (FRANCISCO), physician, XIX. 594.
 Sancho, King of Portugal, XVIII. 381.
 SANCHUNIATHON, XIX. 594—Bishop Cumberland's translation of his works, VII. 580.
 SANCROFT (William), archbishop, XIX. 596.
 Sanctification, in theology, XXI. 218.
 SANCTORIUS, Italian physician, XIX. 596—his invention of the thermometer, I. 756; IV. 456—his experiments on the heat of the moon's rays, VII. 766—on artificial congelation, 104.
 Sanctuary of Holyrood, VIII. 395.
 Sand, in geology, XV. 155—fixing of blowing sands, II. 364; VIII. 645—used in blasting, IV. 756; in glass-making, X. 662—use of, in mortar, XX. 718.
 — (George), novelist. See Dudevant.
 Sand-baths, X. 358.
 Sand-eel, IX. 764—mode of catching it in Lapland, XIII. 442.
 Sand-pipers, birds, XVI. 803, 805.
 Sandal, XX. 208.
 Sandal-wood, its use in dyeing, VIII. 308—
 — in India, XI. 454.
 — order of plants, V. 204.
 — island, XVII. 240.
 SANDBACH, in Cheshire, XIX. 596.
 SANDBY (Paul), painter, XIX. 596.
 Sandcrack, XXI. 562.
 SANDEMANIANS, XIX. 596; X. 675.
 Sanderling, bird, XVI. 804.
 Sanders, a brown dyestuff, VIII. 308.
 SANDERSON (Robert), bishop, XIX. 596.
 Sandey, one of the Orkney islands, XVI. 718, 719.
 Sandford (Sir D.), on Pindar's poems, XVIII. 102.
 Sandi, town in Oude, XVII. 18.
 Sandili, Kafrarian chief, XIII. 35.

SAN—SAN

Sandius (Christopher), his Bibliotheca Antitritinaria, III. 278.
 Sandiver, X. 382.
 SANDOVAL (F. Prudencio de), bishop and historian, XIX. 597.
 SANDRART (Joachim von), artist, XIX. 597.
 Sandstone, XV. 141, 155—varieties of, 142—ripple marks on, 159—of the Permian period, 205—as a building stone, XX. 711—strength of, 717.
 — red and mottled, XV. 206—white, ib.—old red (see Devonian).
 SANDUSKY, town in United States, XIX. 597; XVI. 490.
 — river, XVI. 489.
 SANDWICH, in Kent, XIX. 597.
 — ISLANDS, XIX. 598; XVIII. 270—Cook's discovery of, VII. 340—bread-fruit of, V. 301—tides at, XVII. 581—height of mountains, 645—volcanoes, XXI. 604.
 — (Lord), V. 487.
 Sandworts, plants, III. 521.
 SANDYS (George), poet, XIX. 598.
 — (Sir Edwin), V. 381.
 Sang (Edward), on the teeth of wheels, XIV. 395—his plutometer, 415.
 SANGA, in Japan, XIX. 599.
 Sangala, taken by Alexander the Great, XIII. 770.
 SANGALLO, fam. of architects, XIX. 599, 600.
 SANGERHAUSEN, in Prussia, XIX. 600.
 SANGORA, in Siam, XIX. 600.
 Sangro, river, XII. 638; XX. 238.
 Sanguification, XVII. 661.
 Sanguine, in heraldry, XI. 324.
 Sanguinolaria, genus of mollusks, XV. 350.
 Sanguisorbida, tribe of plants, V. 191.
 Sanguisuga, genus of annelides, XI. 305.
 SANHEDRIM, XIX. 600; XII. 768.
 SANITARY SCIENCE, XIX. 602—effect of registration on, XVIII. 837—sanitary police, 196—circumstances affecting the health of individuals and communities, XIV. 440, 443—sanitary condition of the woollen and worsted districts, XXI. 920—sanitary properties of tea, XX. 83—ventilation, as a sanitary agent, XXI. 539.
 Sanjar, sultan, XVII. 437.
 SANNAZARO (Jacopo), Italian poet, XIX. 622.
 SANQUHAR, in Dumfriesshire, XIX. 623—Crawick Mill near, VIII. 238.
 — (Lord), execution of, VI. 626.
 Sans Souci, XVIII. 429.
 SANSANDING, in Western Africa, XIX. 624.
 SANSKRIT, XIX. 624—alphabet, II. 615—literature, V. 270—language, I. 204; XIII. 199, 206, 207, 228; XVII. 519—study of, 529—grammars of, 527, 529—mode of writing it, II. 611—its affinity to Greek, VI. 365; to the Gothic, X. 726—its prevalence in the languages of the Indian archipelago, III. 748.
 Sansevera fibre, XXI. 782.
 Sanson (Mlle.), magnetic experiments on, XX. 426.
 — (NICOLAS), geographer, XIX. 624.
 SANSOVINO (Jacopo Tatti), XIX. 625—his merits as an architect, III. 452—his sculptures, XIX. 863.
 SANTA ANNA, town in San Salvador, XIX. 625.
 — Australasian island, XVIII. 727.
 — CATHARINA, in Brazil, XIX. 625.
 — CRUZ, XIX. 625; VI. 163, 164, 166; IV. 752—Nelson's attack on, XVI. 134.
 — CRUZ DE LA SIERRA, in Bolivia, XIX. 625; IV. 821—population of, 828.
 — Fé de Bogota. See Bogota.
 — Fé, in La Plata, XIX. 625; XVII. 779.
 — Fé in New Mexico, XIX. 625; XIV. 730.
 — MARTA, in New Granada, XIX. 625; X. 797—mountain chain, 795, 796.
 — MAURA, one of the Ionian isles, XIX. 626; XII. 452; XIII. 348.
 — Anna, president of Mexico, XIV. 712, 713, 714.
 — Cruz, president of the Bolivian republic, IV. 837; XVII. 468, 469.
 Santalaceæ, nat. order of plants, V. 205.

SAN—SAR

Santals, Indian race, XI. 467.
 Santana (General Pedro), XI. 258.
 SANTANDER, in Spain, XIX. 626.
 — (General), IV. 818, 819.
 — (M. de la Serna), on the origin of printing, IV. 707; XVIII. 526—on early printed books, IV. 708.
 SANTAREM, town in Portugal, XIX. 626.
 SANTEUL (J. Baptiste de), XIX. 626.
 SANTIAGO, island, XIX. 626.
 — DE CHILI, XIX. 627; VI. 542, 544, 547—academies and schools of, 546.
 — DE COMPOSTELLA, XIX. 627.
 — DE CUBA, XIX. 628; VII. 567—copper mines of, 566.
 — DEL ESTERO, in La Plata, XIX. 628; XVII. 779.
 — in New Granada, X. 797.
 Santillana (Marques de). See Mendoza (Inigo Lopez de).
 Santini (Prof.), on the planet Jupiter, IV. 91.
 SANTONA, town of Spain, XIX. 628.
 SANTORIN, island, XIX. 628—wine of, XI. 16.
 Santorini, his anatomical discoveries, II. 764—tubercles of, III. 50.
 SANTOS, town of Brazil, XIX. 628.
 SAO SEBASTIAO, town in Brazil, XIX. 630.
 SAONE, river in France, XIX. 628.
 — HAUTE, in France, XIX. 628.
 — ET LOIRE, in France, XIX. 629.
 Saoud, a Wahaby chief, III. 365.
 Sap of plants, circulation of, V. 110; XXI. 268—Coulomb on the circulation of, VII. 464—in trees, XXI. 267, 268.
 Sap-vessels of plants, V. 111.
 Sap-wood, V. 81; XXI. 267, 270—in fir timber, 275—should be removed from the timbers of ships, 280.
 Sapajous, in zoology, XIV. 141, 143—brain of, III. 176.
 Saperda, genus of insects, IX. 146.
 Sapindaceæ, nat. order of plants, V. 186.
 Sapodilla order of plants, V. 199.
 Saponite, mineral, XV. 84.
 Sapor, or Shappur, king of Persia, XVII. 435—his embassy to Constantinople, VII. 306—his war with the Emperor Constantius, 307; with Julian, XIII. 17.
 Sapotaceæ, nat. order of plants, V. 199.
 SAPPERS AND MINERS, XIX. 630; IX. 823, 824; III. 666.
 SAPHIRE, XIX. 630; XV. 87; XVII. 623—
 — in Burmah, V. 779—crystallisation of, VII. 563—specific gravity of, XII. 88—lenses of, XIV. 767—dichroism in, XVI. 666.
 — d'eaux, XV. 88.
 Sapphirine, XV. 87.
 SAPPHO, XIX. 630—character of the poetry of, XVIII. 102.
 Sapromyza, genus of insects, IX. 251.
 Sapucaia-nut, XVI. 395.
 Sapyga, genus of insects, IX. 195.
 Sapygites, family of insects, IX. 195.
 SARABAND, Spanish dance, XIX. 630.
 Sarabat, river, XI. 353.
 Saracenic architecture, III. 447—in Spain, 449.
 Saracens, Arabians, or Moors, XV. 305—destruction of their power in Spain, II. 24—their wars with the Roman emperors, VII. 313 *et seq.*—their invasion of Europe checked by the Crusades, 536—their invasion of France, X. 6; of Italy, XII. 643—their sway in Palestine, XVII. 196—literature, science, and art among, XV. 306—agriculture under, II. 251—their conquest of Spain, and history of their kingdoms there, XX. 460, 465—their condition under them, 466—their revolt there in the sixteenth century, 469. See Arabians, Moors.
 SARAGOSSA, or Zaragoza, in Spain, XIX. 630; III. 393—university of, XXI. 492.
 SARAIK, in Russia, XIX. 631.
 SARANSK, in Russia, XIX. 631.
 SARAPUL, in Russia, XIX. 631.
 SARATOGA SPRINGS, XIX. 631—Burgoyne's disaster at, V. 483.
 SARATOV, in Russia, XIX. 631, 632.
 SARAWAK, in Borneo, XIX. 632; V. 48, 49—
 — Sir James Brooke's account of, 49.

SAR—SAT

SARAWAN, in Beloochistan, XIX. 632.
 Sarcocarp, in botany, V. 135.
 Sarcocol, gum-resin, V. 205.
 Sarcolite, mineral, XV. 75.
 Sarcophaga, genus of insects, IX. 249.
 SARCOPHAGUS, XIX. 632—of Cecilia Metella, III. 473.
 Sarcoramphus, genus of birds, XVI. 738.
 SARDANAPALUS, XIX. 632; III. 778; XVI. 272, 275.
 Sardari, pass of, XVII. 420.
 Sardinella, genus of fishes, XII. 237.
 Sardines, XII. 236; IX. 763—French fishery of, X. 264.
 SARDINIA (kingdom of), XIX. 632; XII. 653—army, III. 655—monarchy, XV. 414—newspapers, XVI. 203—railway statistics, XVIII. 787—French trade with, X. 259—coins, XV. 442, 444—height of mountains in, XVII. 642—postal system, XVIII. 424—navy, XX. 138—attack of refugees on, 887—weights and measures, XXI. 813—universities, 492—map of, XII. Plate.
 — (island), XIX. 632—physical aspect of, 634—divisions, provinces, population, 640—early history, 642—reduced by the Romans, VI. 288—language, XIII. 213—map of, XII. Plate.
 SARDIS, or Sardes, in Asia Minor, XIX. 645.
 SARDONIC LAUGHTER, XIX. 645.
 SARDONYX, XIX. 645; VI. 67.
 SAREPTA, in Russia, XIX. 645.
 Sargus, genus of insects, IX. 237.
 — genus of fishes, XII. 286, 287—fossil, 344.
 SARI, or Saree, Persian town, XIX. 645.
 Sarine, Swiss river, bridges over, X. 305.
 Sarkolemma, II. 822.
 Sarkolite, mineral, XV. 73.
 SARLAT, in France, XIX. 646.
 SARMATIA, XIX. 646.
 Sarmatian languages, XIII. 215.
 Sarmatians, IX. 388—Constantius' war with the, VII. 302, 306.
 SARNO, town of Naples, XIX. 646.
 — river, XX. 238.
 Saropoda, genus of insects, IX. 100.
 SAROS-PATAK, town in Hungary, XIX. 646.
 Sarraceniaceæ, nat. order of plants, V. 182.
 SARREGUEMINES, town in France, XIX. 646.
 Sarrotherodon, genus of fishes, XII. 265.
 SARSAPARILLA, XIX. 646; V. 199; III. 128.
 — order of plants, V. 210.
 SARTHE, in France, XIX. 646.
 SARTI (Giuseppe), musician, XIX. 647.
 Sartine (M. de), X. 38.
 SARTO (Andrea d'A. V.), painter, XIX. 647; XVII. 66.
 SARUM (Old), XIX. 648.
 SARUN, in India, XIX. 648.
 SARZEAU, town in France, XIX. 648.
 Sashes, in joinery, V. 752—glazing of, 756.
 Saskatchewan, river, XVII. 605.
 Sassanian dynasty, in Persia, XVII. 435—
 — Sassanian coins, XVI. 890.
 SASSARI, town in Sardinia, XIX. 648, 640.
 SASSEHAM, town in India, XIX. 648.
 Sassoline, mineral, XV. 98.
 SATALIAH, Turkish town, XIX. 648.
 Satan, prominence given to him by the Roman Catholics, III. 312. See Devil.
 Sataspes, voyage of, X. 461.
 Satellites, of Jupiter, I. 607, 786; IV. 70, 73, 75, 108—of Saturn, 72, 74, 75, 92; I. 860—of Uranus, ib.; IV. 72, 75—of Neptune, I. 860—orbital of the satellites, IV. 73. See the different planets.
 Satin-bird, XVI. 748.
 Satin-spar, XV. 93.
 Satire, Roman, XVIII. 105.
 Satirists, the most eminent, compared, VIII. 205.
 Satisfaction, for injuries, doctrine of, XIII. 277—Popish doctrines of, XVIII. 336.
 SATORALLYA-UJHELY, town in Hungary, XIX. 648.
 SATTARA, in India, XIX. 648, 649.
 SATURDAY, XIX. 649—origin of the word, VI. 75; I. 458, n.

SAT—SAV

- SATURN, planet, XIX. 649; IV. 71, 92—inequalities of, I. 815; III. 812—periods of revolution, I. 816—ring of, IV. 71—inner ring, 92—satellites of, 72, 74, 75; I. 860—variation in its orbit, IV. 107—physical condition of its surface, 92—discovery of the eighth satellite, ib.—Herschel's observations on, I. 840.
- SATURNALIA, XIX. 649.
- SATURNIA, genus of insects, IX. 212.
- SATURNINUS, Gnostic, X. 688.
- Roman tribune, XIX. 319.
- SATURNUS, XIX. 649.
- SATYRIASIS, XIV. 532.
- SATYRS, XIX. 649; IV. 348.
- SATYRUS, genus of insects, IX. 208.
- Sauces, adulteration of, IX. 770.
- Sauchy Burn, defeat of James III. at, XIX. 763.
- Sauer-kraut, X. 586.
- SAUGOR, in India, XIX. 649—Sepoy insurrection at, XVI. 310.
- SAUL, XIX. 650; XII. 766.
- XVII. 344. See Paul.
- Saul-wood of India, XXI. 277.
- Sauley (Mr F. de), his work on the insects of the Dead Sea, IX. 24.
- SAUMAREZ (James, Baron de), admiral, XIX. 650—his naval engagement off the coast of Spain, V. 583.
- SAUMUR, town in France, XIX. 650.
- SAUNDERSON (Dr Nicholas), mathematician, XIX. 650; I. 713, n. 4; IV. 774, 780.
- SAURAT, village in France, XIX. 651.
- Sauveys, fish, XII. 244.
- Sauria, or Saurian reptiles, XIX. 21; XVII. 634—number known, XIX. 51, n.—their bones, III. 86 *et seq.*—vocal organs, 102—odontology of, XVI. 433—fossil, XVII. 140. See Lizards.
- Saurichthys, genus of fossil fishes, XII. 335.
- Saurida, genus of fishes, XII. 248.
- Saurin (Jacques), preacher, XIX. 651.
- (JOSEPH), geometrician, XIX. 652—on the calculus, IX. 676.
- Saurocephalus, genus of fossil fishes, XII. 346.
- Saurodon, genus of fossil fishes, XII. 346.
- Sauroides, family of fossil fishes, XII. 335, 349; XVII. 126.
- Sauropsis, genus of fossil fishes, XII. 335; XVII. 126.
- Sauropterygia, fossil reptiles, XVII. 143.
- Sauropus, fossil reptiles, XVII. 133.
- Sauoren, battle of, XXI. 826.
- Saurostomus, fossil fishes, XII. 336; XVII. 126.
- Saururaceæ, nat. order of plants, V. 207.
- Saurus, genus of fishes, XII. 244, 248.
- Saury-pike, fish, XII. 264.
- Sausage poison, IX. 761.
- SAUSSURE (H. Benedict de), XIX. 652—his investigation of plants, II. 373—his account of two albinos, 447—his ascent of Mont Blanc, 627; and observations on its height, IV. 467—on the carbonic acid of the atmosphere, 182—on the temperature of the air at different altitudes, VI. 780; and of the earth at different depths, 767—on the temperature of the Swiss lakes, 777—his cyanometer, VII. 606—electrical effects of thunder clouds experienced by, 39—on electricity, VIII. 531, 566, 571, 578—his electrometer, 619—on evaporation, IX. 407—on the descent of glaciers, X. 637, 638—his hygrometer, XII. 186.
- (H. F.), his works on insects, IX. 24.
- Saussurite, mineral, XII. 669; XV. 71.
- Sauve-gardes, reptiles, XIX. 28.
- SAUVEUR (Joseph), mathematician, XIX. 653.
- SAVAGE (Mr) his printing ink, XVIII. 545.
- (Richard), poet, XIX. 653—his intimacy with Dr Johnson, XII. 796; his Life by, ib., 802—poetry of, XVIII. 124—Pope's generosity to, 334, n.
- Savages, if left to themselves incapable of civilization, I. 449, 450; VIII. 91; XIII. 186—their supposed antidotes to snake poison, XVIII. 134.

SAV—SAX

- SAVAH, island, XIX. 654; XVIII. 277.
- SAVAN DROOG, Indian hill-fort, XIX. 654; V. 541; XI. 498.
- SAVANNAH, in Georgia, XIX. 654; X. 565.
- river, VI. 247; X. 565.
- Savannahs, XVII. 609—in Gufana, XI. 81.
- Savart (Felix), I. 892—on the propagation of sound, ib.—on musical notes, ib.—on the vibration of solids, ib.—his experiments in hydraulics, XII. 151.
- Savary (General), X. 130.
- (M.), on electro-magnetism, VIII. 532; XXI. 638.
- (NICOLAS), traveller, XIX. 654.
- (Servington), his double image micrometer, XIV. 747.
- SAVE, river, XIX. 654; XII. 10.
- SAVERNE, town in France, XIX. 654.
- Savery (Capt. Thomas), his steam-engine, XX. 574, 577; I. 770.
- Savi (Prof.), on the cohabitation of the ant and grasshopper, III. 264—on the myriapoda, XI. 747, 748—on birds, XVI. 731, 760, 777, n. 4, 791.
- SAVIGLIANO, Italian city, XIX. 654.
- Savigny on the Capitularies, VI. 220—on the Roman law, 748.
- (M.), on the organs of the mouth in insects, IX. 30—on the arachnides, III. 371, 386—on the mollusca, XI. 331—on the annelides, 293 *et seq.*
- SAVILLE (George), Marquis of Halifax, XIX. 655; V. 439 *et seq.*
- (Sir HENRY), XIX. 655.
- Saville (Sir George), V. 490.
- (Henry), his disapprobation of the use of tea, XXI. 89.
- SAVINGS BANKS, XIX. 656—in Belgium, IV. 624—Ireland, XII. 528—Lombardy, XIII. 647—London, 665—New York, XVI. 229—Paris, XVII. 283.
- SAVONA, Italian city, XIX. 674, 640.
- SAVONAROLA (Girolamo), XIX. 674; XIV. 459.
- Savoury, plant, V. 202.
- SAVOY (duchy of), XIX. 675—climate, 633—cultivation, 634—glaciers of, X. 633.
- cabbage, XI. 737.
- House of, XIX. 641.
- Savria (Marquis of), V. 465.
- SAW, XIX. 676—circular saw for farms, II. 268—manufacture of surgical saws, VII. 601—circular, for cutting iron, XII. 561, 574.
- Saw-dust, as manure, II. 406—as a deodorizer, and preserver of animal substances, XIX. 621.
- Saw-fish, XII. 223. See Pristis.
- Saw-flies, IX. 183.
- SAW-MILL, XIX. 678—at Chatham, VIII. 81—in Holland, XI. 583.
- Saw-wort, yellow dyestuff, VIII. 297.
- SAWUNT WAREE, in India, XIX. 678.
- Sawyer's work, V. 754.
- Sax, of Brussels, his wind instruments, XV. 742.
- SAXE (Maurice, Count of), marshal, XIX. 679; V. 459.
- SAXE-ALTENBURG, XIX. 680.
- SAXE-COBURG-GOTHA, XIX. 681.
- SAXE-MEININGEN, XIX. 682.
- SAXE-WEIMAR-EISENACH, XIX. 682.
- Saxicava, genus of mollusks, XV. 350—fossil, XVII. 108.
- Saxicola, genus of birds, XVI. 755.
- Saxifragaceæ, nat. order of plants, V. 194—region of the, 227; XVII. 627.
- SAXO, or Saxo Grammaticus, XIX. 683, 692.
- Saxon architecture in England, III. 480—bibles, IV. 702—heptarchy, VIII. 656—language, XIII. 211—laws of frankpledge, XVIII. 191—roofs, XIX. 390.
- Reen, town in Transylvania, XX. 912.
- Saxon-blue, dyeing of, VIII. 303.
- Saxon-green, dyeing of, VIII. 309, 310.
- Saxons, VIII. 793—their conquest of England, V. 374, 381—settlement in Scotland, XIX. 743—coinage of the, VII. 70—Charlemagne's wars with, X. 7, 8, 9—naval affairs under the, XX. 119.
- SAXONY, XIX. 684—army of, III. 651—

SAX—SCA

- metallic produce of, XV. 248—silver mines of, 235—tin mines, 240—agriculture in, XVIII. 665, 666—the Reformation established in, 822—postal system, 424—ravaged by Tilly, XX. 849—war with Charles XII. of Sweden, 854—weights and measures, XXI. 813—universities, 492—wool, 905, 906.
- SAXONY, Prussian province, XIX. 687.
- Saxton's magneto-electric machine, XXI. 646.
- SAY (Jean Baptiste), political economist, XIX. 687—on the value of money, XV. 420—on political economy, XVIII. 254, 259, n. 2.
- (Thomas), his work on American insects, IX. 17.
- Say's stereometer, XII. 87.
- Saynite, mineral, XV. 116.
- Scab and Scab-mange, in cattle and sheep, XXI. 578.
- Scaffold, bricklayer's, V. 733.
- SCALA NOVA, Turkish town, XIX. 688.
- Scalambra, cape, XX. 245.
- Scalaria, genus of mollusks, XV. 383.
- Scalding, death from, XIV. 431.
- Scalds, poets, XIX. 689.
- Scale, mathematical instrument, XIX. 688—*in music*, ib.; XV. 706—*in botany*, V. 113, 124—scales of force, velocity, acceleration, time, &c., VIII. 352—scales of fishes, XII. 216, 217, 332, 333; XVII. 123, 124, 127—dialling scales, VII. 782.
- of the Trigonometrical Survey, XXI. 332 *et seq.*
- Scale-stones, their use in sculpture, XIX. 868.
- Scalene triangle, X. 507.
- SCALIGER (Julius Cesar), XIX. 688.
- (JOSEPH JUSTUS), XIX. 688; V. 254, n. 4; XVII. 523—derives the Greek letters from the Phœnician, II. 612—collection of anecdotes of, 737—his vanity and dogmatism, 738—Julian period proposed by, VI. 81—his altercation with Scioptius, XIX. 735—on the squaring of the circle, XX. 521.
- Scallies, fossil mollusks, XVII. 110.
- Scalloway, in Shetland, XX. 113.
- Scallops, genus of mammalia, XIV. 151—teeth of, XVI. 450.
- Scalp, muscles of the, III. 39.
- Scalpel, XX. 821.
- Scalpellum, fossils, XVII. 101.
- Scaly-lizard, XIV. 192.
- SCAMANDER, river, XIX. 688; XXI. 356, 357, 358.
- Scammony, plant, V. 201.
- Scamozzi, architect, III. 452.
- Scamptiro, fish, XII. 293.
- SCANDERBEG, XIX. 688; II. 736; XXI. 368.
- SCANDEROON, XIX. 688; II. 469.
- SCANDINAVIA, XIX. 688; XVI. 316; VII. 750—mythology of, XV. 767—romances of, XIX. 264—reptiles of, 15—languages, XIII. 211—Cambrian and Cambro-Silurian rocks of, XV. 196, 197—mountain system of, XVII. 595—heights of mountains, 642, 643—suicide in, XX. 799.
- SCANDINAVIAN LITERATURE, XIX. 689—historical writers, XI. 549.
- machine-press, XVIII. 562.
- Scandinavians, XIX. 688—in the Hebrides, XI. 279—origin of jury trial among the, XII. 22—discovery of America by the, XVIII. 163, n. 2.
- Scania, plain of, XX. 861.
- Scanno, lake, XX. 239.
- Scansores, order of birds, XVI. 774.
- Scantlings of timber, XX. 780.
- Scape, in botany, V. 113.
- Scapement. See Escapement.
- Scaphander, genus of mollusks, XV. 372.
- Scaphidites, tribe of insects, IX. 114.
- Scaphidium, genus of insects, IX. 114.
- Scaphites, extinct mollusks, XV. 394; XVII. 113.
- Scaphoid bone, III. 36.
- Scaphura, genus of insects, IX. 158.
- Scapolite, XV. 72.

SCA—SCH

- Scapula, III. 31—in the mammalia, 81—in birds, 86—in reptiles, 88.
- (JOHN), XIX. 702—his conduct to Henry Stephanus, XX. 680.
- (Ostorius), V. 377.
- Scarabæides, family of insects, IX. 118.
- Scarabæus, genus of insects, IX. 122 and n. 2—Egyptian, 119; XI. 388—sacred to Ptah and Rae, VIII. 439.
- Scarba, whirlpool of Coryvreckan near, VII. 422.
- SCARBOROUGH, XIX. 702.
- in Tobago, XXI. 297.
- Scarbroite, mineral, XV. 84.
- Scarf-skin, II. 834.
- Scarfing, in carpentry, V. 746; VI. 261, 263.
- Scarites, genus of insects, IX. 85.
- Scaritides, family of insects, IX. 85, 87.
- SCARLATTI (Alessandro), musician, XIX. 703.
- (DOMENICO), musician, XIX. 703.
- Scarlet, mode of dyeing wool, VIII. 288; silk, 292; cotton, 295.
- FEVER, XIX. 704.
- SCARPA (Antonio), XIX. 704—his anatomical investigations, II. 767—on the structure of bone, 826—on the nerves, 806, 814—on the nerves of the nose, III. 43—his surgical improvements, XX. 819.
- SCARPANTO, island, XIX. 705.
- Scarping, in ship-building, XVI. 97.
- SCARRON (Paul), XIX. 705; XIV. 100.
- Scarus, fish, XII. 266, 267—bones and teeth of, XVI. 410, 420, 421, 422, 426.
- Scatharus, genus of fishes, XII. 287.
- Scatophaga, genus of insects, IX. 251.
- Scatophagus, genus of fishes, XII. 301, 302—fossil, 344.
- Scatopse, genus of insects, IX. 229.
- Scattery, island, VI. 754, 755.
- Scaurus, genus of insects, IX. 129.
- Scearston, battle of, VIII. 662.
- Sceattæ, Anglo-Saxon coin, VII. 70.
- Sceaux, in France, XX. 34.
- Sceledosaurus, fossil reptiles, XVII. 150.
- Scenery, introduced upon the stage by Æschylus, VIII. 134.*
- Scenopini, family of insects, IX. 244.
- Scenopinus, genus of insects, IX. 244.
- Scepaceæ, nat. order of plants, V. 206.
- SCPTICISM, XIX. 706—Bishop Earle's description of a sceptic, I. 51—Hume's, 209, 210; XII. 5, 6; XIV. 612—Glanvil on, X. 642—of Sextus Empiricus, XX. 67.
- SCPTRE, XIX. 711.
- SCHADOW (J. Gottfried), sculptor, XIX. 711.
- Schaeffer (J. C.), his works on insects, IX. 6.
- Schafarik (Paul Joseph), on Slavonic philology, XVII. 529.
- SCHAFFHAUSEN, XIX. 711; XX. 882—falls of, XVII. 605.
- SCHALKEN (Godfrey), painter, XIX. 712.
- Schamyl, VI. 342; XIX. 507.
- SCHASSBURG, Austrian city, XIX. 712.
- Schaum (H.), his works on insects, IX. 22.
- SCHAUMBURG-LIPPE, XIX. 712; XIII. 503.
- Schaw (Sir John), his improvement of Greenock, XI. 45.
- Schaw's Hospital, XI. 178.
- Schazk, Russian town, XX. 94.
- SCHÉELE (Charles William), XIX. 712—his experiments on heat, I. 762; XI. 262—on the composition of the atmosphere, IV. 180—his chemical discoveries, 758—on the effects of light on metallic solutions, XIII. 459.
- Scheele's green, VI. 495; VIII. 319.
- Scheelite, mineral, XV. 106.
- Scheelite, mineral, XV. 105.
- SCHÉEMAKER (Peter), Flemish sculptor, XIX. 713.
- Scheererite, mineral, XV. 125.
- SCHÉFFER (Ary), painter, XIX. 713; III. 749.
- (JEAN), antiquary, XIX. 713.
- Schehallion, Scotch mountain, XVII. 454—geology of, 456—height of, 643 and n. 2—Maskelyne's observations on the attraction of, I. 834; III. 807; XIV. 335.
- SCHNEID (Everard), philologist, XIX. 714.

SCH—SCH

- Scheiks, in Arabia, III. 350, 351—among the Druses, VIII. 199.
 SCHEINER (Christoph.), XIX. 714—on the solar spots, III. 801; IV. 25, 26, 28; XIV. 742—on optics, XVI. 531.
 SCHELDT, river, XIX. 714; IV. 611; XI. 581; XVII. 647—navigation of, X. 77.
 SCHELESTADT, town in France, XIX. 714.
 Schellenberg (J. R.), his works on insects, IX. 11.
 SCHELLING (F. W. Joseph von), XIX. 714; XI. 282—his system of philosophy, I. 200, 201; XIV. 607—on ancient mysteries, XV. 754—his pantheism, XVII. 237—Jacobi on, XII. 668.
 Schemacha. See Shamaka.
 Schemes of the Scotch Established Church, XVIII. 493.
 SCHEMNITZ, in Hungary, XIX. 716.
 Schenck's process of flax-retting, II. 332; IX. 655, 656.
 SCHENECTADY, town in New York, XIX. 716.
 Scherer (General), X. 111.
 SCHERZO, XIX. 716.
 Scheubellus, his improvements in algebra, II. 485.
 SCHEUFFELIN (Hans Leonard), painter, XIX. 716.
 Schütz's calculating engine, I. 881.
 SCHEVENINGEN, in Holland, XIX. 716.
 Schiecha. See Scheiks.
 SCHIEDAM, in Holland, XIX. 716—distilleries of gin at, VIII. 51.
 Schiel's pivot, XIV. 406.
 Schiffermüller, his work on insects, IX. 7.
 Schilbes, genus of fishes, XII. 261.
 SCHILLER (J. C. Frederick von), XIX. 716—his plays, VIII. 167—poetry, XVIII. 119—his ballad of the Fight with the Dragon, 108—novels, XIX. 293.
 Schillerspar, XV. 79.
 SCHINKEL (Karl Friedrich), architect, XIX. 721.
 SCHINZNACH, in Switzerland, XIX. 722.
 SCHIO, in Austrian Italy, XIX. 722.
 Schiodte (J. C.), his work on insects, IX. 23.
 Schirach on bees, IV. 571.
 SCHISM, XIX. 722.
 Schisopyge, genus of fishes, XII. 257.
 Schisothorax, genus of fishes, XII. 257.
 Schist, XV. 154. See Slate.
 Schizandraceæ, nat. order of plants, V. 181.
 Schizaster, fossil echinoidia, XVII. 100.
 SCHLAN, town in Bohemia, XIX. 722.
 SCHLAWA, town in Prussia, XIX. 722.
 SCHLEGEL (A. Wilhelm von), XIX. 722—on the study of Sanscrit, XVII. 529—his acquaintance with M. de Staël, XX. 526.—(F. C. WILHELM VON), XIX. 723—writings of, I. 214, n. 2—on the tragedies of Euripides, VIII. 138; IX. 379—on French comedy, 156—on the German drama, 167—on the Indians, XVII. 527—on poetry, XVIII. 103, 104 *et seq.*—his work on serpents, XIX. 16, n. 2—partial translation of, by Professor Traill, ib.—on ophidians, 40 and n. 1—on serpents, 42, 47 *et seq.*—his arrangement of serpents, 71—on the serpents of Amboyna, II. 661.
 Schleiden (J. M.), on the cytoblast, II. 783; V. 67—on the cells of plants, 68—on humus, II. 377—on plants, V. 73 *et seq.*—on the structure and physiology of plants, V. 67 *et seq.*
 SCHLEIERMÄCHER (F. D. E.), theologian, XIX. 725; XVII. 525—on our dependence on the Deity, XIV. 620, n. 2; 621, n. 2—on theology, XXI. 181, 189 *et seq.*
 SCHLEITZ, XIX. 727.
 Schlerodermi, family of fossil fishes, XII. 338.
 SCHLESWIG, in Denmark, XIX. 727.—or Sleswick (duchy of), XIX. 727; VII. 745, 746.
 Schligmann on birds, XVI. 729.
 SCHLÖZER (A. Ludwig von), historian, XIX. 727.
 SCHLÜSSELBURG, in Russia, XIX. 727.
 SCHMALKALDEN, XIX. 727.

SCH—SCH

- Schmidt-Gobel (H. M.), his work on insects, IX. 23.
 Schmitz, on the figure of the earth, IX. 563.
 —(H. D.), his weighing-table, XXI. 798.
 —(Dr Leonhard), his edition of Niebuhr's Lectures, XVI. 260—his translation of Zumpt's Latin Grammar, XXI. 1010.
 SCHMÖLLN, XIX. 727.
 SCHMÖLNITZ, in Hungary, XIX. 727.
 SCHNEEBERG, in Saxony, XIX. 727.
 SCHNEIDEMÜHL, Prussian town, XIX. 728.
 Schneider (G. T.), his work on insects, IX. 22.
 —(JOHANN GOTTLÖB), XVI. 728—his Greek Lexicon, XVII. 526.
 Schneiderian membrane, III. 42.
 Schnitzler (M.), on the forests of Russia, XIX. 519.
 SCHNORR VON KARLSFELD (Julius), painter, XIX. 728.
 SCHNURER (C. Friedrich), XIX. 729.
 Schœffer on birds, XVI. 729.
 Schoen (Martin), engraver, VIII. 800.
 Schoenbrunn, palace of, XXI. 585.
 Schöenherr (C. J.), his works on insects, IX. 12.
 SCHÖFFER (Peter), early printer, XIX. 728; XVIII. 528, 529; XXI. 400.
 Scholars at Oxford, XXI. 456.
 Scholarships, in universities, XXI. 472, 490.
 Scholastic Ethics, I. 323 *et seq.*
 SCHOLIAST, XIX. 728—scholiastics, VIII. 90.
 Scholium, X. 508.
 SCHOLZ (J. M. August), philologist, XIX. 728—on the text of the New Testament, 836.
 Schomburg, clipper sailing-ship, XX. 164, 192.
 —(F. A.), Duke of, XIX. 728—his Irish campaigns, V. 442; XII. 489.—town in Austria, XIX. 729.—(Uldaric), a blind scholar, IV. 779.
 Schomburgk, his discovery of the Victoria regia, XI. 82.
 Schönbein's method of making gun-cotton, XI. 94.
 SCHÖNEBECK, town in Prussia, XIX. 729.
 Schoner (Andrew), his work on dialling, VII. 776.
 —(John), on dialling, VII. 775.
 SCHÖNHAIDE, town in Saxony, XIX. 729.
 SCHÖNLINDE, town in Bohemia, XIX. 729.
 Schoolmasters, diseases of, XIV. 442—their salaries, XIX. 801, 802.
 Schoolmen, their perversion of Aristotle's philosophy, III. 551.
 SCHOOLS, XIX. 729; XXI. 444—infant and adult, IV. 618—parochial, XVIII. 494—of the Free Church, 495—principal English, VIII. 745—collegiate and grammar in England, ib.—number in England, 746—supported by religious bodies in England, ib.—day, Sunday, and evening, for adults, in England, 747; in Britain, XV. 824—receiving grants from Government, ib.; XIX. 802—normal schools, XV. 827; in Glasgow, X. 653; in Scotland, XIX. 802—as affecting health, XIV. 444—Bell's schools, XV. 822—in Ireland, XII. 533, 534—Belgium, IV. 617—Bengal, 652—Scotland, XIX. 802, 803. See the different countries; also National Education, Universities.
 —medical, in the United Kingdom, XIV. 463—of Edinburgh, XXI. 484—in United States, 493.
 —mining, XV. 247; XXI. 323.
 —of Art, in Leeds, XIII. 314.
 —of design. See Design, schools of.
 —of law and theology, in United States, XXI. 494.
 —OF MUSIC, XIX. 729. See Conservatory, Mattel, Martini.
 —Sunday. See Sunday Schools.
 —trade, XXI. 321.
 SCHOOTEN (Francis), mathematician, XIX. 729—on amicable numbers, II. 716.

SCH—SCI

- Schorl, XI. 89.
 Schorlamite, mineral, XV. 110.
 SCHOTT (Andrew), Jesuit, XIX. 727.—(Gasper), on aeronautics, II. 167—on the coldness of the moon's rays, VII. 766.
 —(Dr William), XVII. 535—Klaproth's exposure of his pretended translation of Confucius, XIII. 105—on the text of the New Testament, XIX. 836.
 Schouten, his visit to Papua, IV. 265; and New Britain, 264.
 Schouw (Prof.), on the distribution of plants, V. 223—on the flora of Britain, 231—his phyto-geographic regions, 227; XVII. 627.
 Schouwen, island in Zealand, XXI. 968.
 Schrank (F. de P.), his work on insects, IX. 7.
 Schreger on the lymphatics, II. 805.
 Schreifers (C.), his works on insects, IX. 13.
 SCHREVELIUS (Cornelius), Dutch lexicographer, XIX. 730.
 Schroeter on the moon's atmosphere, IV. 44—on Mercury, 65; Venus, ib.; Ceres, 68; Pallas, ib.; Jupiter, 69, 71.
 Schrötterite, mineral, XV. 83.
 Schubert on the fertility of Palestine, XVII. 190.
 Schubler (Prof.), on the physical characters of soils, II. 297—on atmospheric electricity, VIII. 579.
 Schuiskoy, XIX. 475.
 SCHUJA, town in Russia, XIX. 730.
 Schulenburg, or Schulleberg (Count), XII. 456 and n. 2—his campaign against the Swedes, XX. 853—skilful retreat, 854—defeated by Renschild, ib.
 SCHULTENS (Albert), XIX. 730.—(HENRI ALBERT), XIX. 730.
 SCHULTZE (E. C. Friedrich), German poet, XIX. 730.
 Schulz (Dr David), his edition of the New Testament, XIX. 837.
 Schulze on logic, XIII. 581, n.
 SCHUMACHER (H. Christian), astronomer, XIX. 730—his astronomical publications, III. 814.
 SCHUYLKILL, river, XVII. 395, 508, 510.—Canal, XVII. 397.
 SCHWABACH, town in Bavaria, XIX. 730.
 Schwann (Dr), on the cytoblast in animal tissues, II. 783—on the development of animals and plants, XVI. 408—on the teeth, 409.
 SCHWANTHALER (L. Michael), sculptor, XIX. 730.
 Schwartz (Barthold), XI. 150; III. 581, n. 636.
 Schwartz (M. G.), on the Coptic language, XVII. 534.
 SCHWARZ (C. Friedrich), missionary, XIX. 731.
 SCHWARZBURG, in Germany, XIX. 732.
 SCHWAZ, town in Austria, XIX. 732.
 SCHWEDT, town in Prussia, XIX. 732.
 Schwegler on the Pelasgi, XVII. 370, 371—on Niebuhr's theory respecting the sources of early Roman history, XIX. 309, n.
 SCHWEIDNITZ, town in Prussia, XIX. 732.
 Schweigger's electrical multiplier, I. 976; VIII. 616; XXI. 641.
 SCHWEINFURT, town in Bavaria, XIX. 733.
 Schweitzer (Dr), his analysis of sea water, XIX. 585.
 SCHWELM, town in Prussia, XIX. 733.
 Schwenkfeld on ornithology, XVI. 725.
 Schweran, instrument, VIII. 270.
 Schwerd (F. M.), on optics, XVI. 613.
 SCHWERN, German town, XIX. 733.—Prussian town, XIX. 733.—Field-Marshal, XVIII. 652, 653.
 Schweynheym, early printer, XVIII. 532.
 SCHWIEBUS, town in Prussia, XIX. 733.
 SCHWYTS, Swiss canton, XIX. 733—town, ib.—statistics of, XX. 882.
 SCIACCA, town in Sicily, XIX. 733.
 Sciadephorus, genus of mollusks, XV. 400.
 Sciaenes, genus of fishes, XII. 262.
 Sciana, genus of fishes, XII. 285.
 Sciaenidae, family of fishes, XII. 284, 285.
 Sciara, genus of insects, IX. 229.

SCI—SCO

- Sciatica, XIX. 142.
 SCIACI, town in Sicily, XIX. 734.
 SCIENCE, XIX. 734—classification of the sciences by Bacon, d'Alembert, and Locke, I. 1—8—dissertations on mathematical and physical, 549, 575, 799—experimental, introduced into England, IV. 452—mixture of, with poetry, XVIII. 108—science and art, XIX. 107; I. 805—in Egypt, VIII. 442, 447—medical, XIV. 449—application of, to ship-building, XX. 140—academies of, II. 62—in the United States, XXI. 424.
 Scienoidei, family of fossil fishes, XII. 344.
 SCILLY ISLANDS, XIX. 734—Sir Cloudesley Shovel wrecked on the, V. 449; XX. 227.
 Scincidae, family of reptiles, XIX. 38.
 Scincus, genus of reptiles, XIX. 38.
 SCINDE, XIX. 734. See Sindh.
 Scindia, Indian chief, XXI. 819.
 Scink, reptile, XIX. 28, 38.
 SCIO, island, XIX. 734—massacre of, in 1823, XI. 26—ancient coins of, XVI. 376—wine of, XXI. 886.
 Sciomyza, genus of insects, IX. 254.
 Scion, in grafting, V. 168; XI. 703.
 SCIOPIUS (Gasper), XIX. 735.
 Scioto, river, XVI. 489.
 SCIPIO, Roman family, XIX. 735.—(AFRICANUS MAJOR), XIX. 735, 311, 314—assisted by Masinissa, XIV. 334—his war with the Carthaginians, VI. 298—his operations against Hannibal, XI. 209.—(ÆMILIANUS AFRICANUS MINOR), XIX. 737, 307, 318—his operations against the Carthaginians, VI. 301—Carthage destroyed by, 303; XIX. 314—Numantia taken by, XVI. 350; XX. 458.
 Scirrhus of the stomach in the horse, XXI. 568.
 Scissurella, fossil mollusks, XVII. 111.
 Scitamineæ, nat. order of plants, V. 211.
 Sciridae, family of mammalia, XVII. 632.
 Scirus, genus of mammalia, XIV. 178.
 SCLAVONIA, XIX. 737. See Slavonia.
 Slavonian Bibles, IV. 701, 702; XIX. 840.
 Slavonians, IV. 318. See Slavonians.
 Slavonic language, XIII. 214; IX. 391—contact of the Arian and Semitic families to be found in, XVII. 535.—philology, XVII. 529.
 Scleranthaceæ, nat. order of plants, V. 204.
 Sclerodermids, fishes, XII. 312.
 Scleroderms, fossil fishes, XII. 351.
 Sclerogenidae, family of fishes, XII. 281.
 Sclerognathus, genus of fishes, XII. 258.
 Sclerotic membrane, III. 43, 95; XIII. 461.
 Scolds, punishment of, VI. 322.
 Scolex, entozoa, XXI. 979.
 Scolexerose, mineral, XV. 71.
 Sclerite, mineral, XV. 75—pyro-electricity of, VIII. 560.
 Scolia, genus of insects, IX. 195.
 Scolietes, family of insects, IX. 195.
 Scollodon, sub-genus of fishes, XII. 323.
 Scoliostoma, fossil mollusks, XVII. 110.
 Scoloker (Anthony), printer, XXI. 401.
 Scolopax, genus of birds, XVI. 802.
 Scolopendra, genus of myriapoda, XV. 749.
 Scolopsides, genus of fishes, XII. 278.
 Scolytus, genus of insects, IX. 142.
 Scomber, genus of fishes, XII. 296.
 Scomberesocidae, family of fishes, XII. 264.
 Scomberesox, genus of fishes, XII. 264.
 Scomberidae, family of fishes, XII. 292, 296, 293, 331—fossil, 345.
 SCONE, village in Perthshire, XIX. 737.
 SCOPAS, sculptor, XIX. 737, 857.
 Scopelidae, family of fishes, XII. 248.
 Scopelus, genus of fishes, XII. 248.
 Scopa. See Uskup.
 Scopoli on birds, XVI. 729—his work on insects, IX. 5.
 Scops, genus of birds, XVI. 746.
 Scopus, genus of birds, XVI. 800.
 SCORE, in music, XIX. 738. See Partition.
 SCORESBY (William, D.D.), XIX. 738—on the magnetic effects of electricity, VIII. 600—on the temperature of the

SCO—SCO

- Arctic regions, VI. 770—on the height of waves, XI. 216—his artificial magnets, XIV. 71—his magnetometer, 82—on the walrus, 173—on Greenland, XI. 40, 41—on medusæ, XXI. 997.
- Scoresby Sound, XI. 41.
- Scorodite, mineral, XV. 102.
- Scorpenæ, genus of fishes, XII. 280, 283.
- Scorpio, genus of arachnides, III. 385.
- Scorpion's Heart, star, III. 267.
- Scorpions, III. 384; VIII. 433; XVII. 637—fossil, 103.
- Scorpiis, genus of fishes, XII. 302.
- Scorzonera, XI. 740.
- Scot (Alexander), IX. 322 n. 2.
- (Dr), of Corstorphine, on domestic poultry, XVI. 789.
- (REGINALD), XIX. 740—on the heathenism of the Church of Rome, III. 311, n. 2.
- and lot, XV. 683.
- Scotch elm, XVII. 758.
- Guards, XI. 74.
- pine, XVII. 756—timber of, XXI. 275.
- snuff, XXI. 295, 297.
- Scoters, birds, XVI. 816.
- Scoti, VI. 74.
- Scotia, in architecture, III. 512.
- Ireland originally so named, VII. 733.
- Scotichronicon, IX. 777, 778.
- Scotinus, genus of insects, IX. 130.
- Scotists. See Duns (John).
- SCOTLAND, XIX. 741—history of, *ib.*—statistics of, 790—reasons why no great writer appeared there in the age of Locke, I. 105—metaphysical and moral philosophers of, 220 *et seq.*, 284, 427 (see Hume, Reid, Stewart, &c.)—mathematical and physical science in, 807 *et seq.* (see Leslie, Watt, Robison, Black, &c.)—agriculture, II. 254, 258, 261, 263 *et seq.*; VIII. 725—Agricultural Chemical Association, II. 265, 374—agricultural societies, 265; VIII. 398—Antoninus' wall, III. 281; V. 379—archbishops formerly in, 423—archery, 425, 428—bagpipe, IV. 365—Covenanters, 371; V. 395, 428 *et seq.*; VII. 469—bankruptcy system, IV. 417—rearing of bees recommended, 587—introduction of bleaching, 758—ale-brewing, V. 326, 334—royal burghs, 54—ancient population of, 375—union of the crowns of England and, 381; XXI. 418—attempt of James VI. to establish Episcopacy, V. 383—similar attempt by Charles I., 394—civil war with him, 395—his visit in 1641, 398—Solemn League and Covenant, 404; VII. 469—invaded by Cromwell, V. 414—tyrannized over by Charles II., 428, 432—submission to William the Third, 440—battle of Killikrankie, 441—massacre of Glencoe, 443—colony on the Isthmus of Darien, 444 (see Darien)—union with England, 449—attempt to dissolve the union, 452—rebellions in 1715 and 1745, 453, 460—subsequent measures for tranquillizing the Highlands, 462—application of the Catholics for relief, 490—Act for the restoration of forfeited estates, 514—complaint of grievances by the royal burghs in 1791, 541—Act for the relief of the Catholics, 549—prosecution of Muir and Palmer in 1793, 550—Acts of Parliament in 1810, respecting ministers' stipends and the Court of Session, 608—resistance to the abolition of small notes, 644—Reform Bill, 661, 663—disruption of the Established Church, 669—Buchanan's History of, 719—castles, VI. 327—Chalmers' Caledonia, 402—assassination common in the sixteenth century, 626—Lord High Constable, VII. 299—corn-laws, 378—coronach, 412—cotton-manufacture, 445 *et seq.*; X. 650; XIV. 285—Lord Hailes' Annals of, VII. 634—Defoe's mission to, 696—deaf and dumb, 686, 687—distillation, VIII. 47, 48, 51, 52—law of divorce, 67, 72—early drama, 144

SCO—SCO

- George IV.'s visit to, 393—emigration from the Highlands, 651—Edward the First's attempts to subjugate, 681—extent of, 715—language, 797—Episcopacy, IX. 182—fisheries, 603 *et seq.*, 635—vitrified forts, 790—glass-making, X. 659—Presbyterianism, XI. 492; XVIII. 489—horses, XI. 662—crown of, 335—royal arms of, 323—form of marriage in, XII. 51—form of infettment in, 379—jury trial, 23, 24—insurance-offices, 407—highways, 433; XXI. 43—irrigation, XII. 619—iron manufacture, 574—leases, XIII. 304—leprosy formerly in, 340—libraries, 400—law of libel, 358—free-masonry, XIV. 338—proportion of insane, 536—geology, XV. 197 *et seq.*—banks and banking, 483—education, 825—militia, 8—money, 435, 440; XVI. 388—monarchy, XV. 414—municipal system, 685—inland navigation, XVI. 55, 58—newspapers, 184 *et seq.*, 192—notaries in, 336—school of painting, XVII. 80—parliament, 290—representative peers, 293—franchise, 294—mountains, 595; heights of, 643—police, XVIII. 203—early printing, 538—registration, 840—marriages, births, and deaths, 841—prisons, 570—convicts, 585—railway statistics, 786, 787 *et seq.*—post-office, 403 *et seq.*—Reformation, 830—regalia, *ib.*—Robertson's History of, XIX. 230—savings-banks, 659—slavery, XX. 321—Steuart's History of, 783—increase of spirit duties in, XXI. 73—quantity of spirits charged with consumption duties, 74—Trigonometrical survey of, 332 *et seq.*—universities, 472—measures, III. 584; XXI. 805—weights, 806—wool, 907—map of, XIX. Plates. See Britain, Highlands, and the names of counties and towns; also the Chronological Table, VI. 683 *et seq.*
- Scotobius, genus of insects, IX. 129.
- Scots, VI. 74—their wars with the Romans, 380—in Ireland, XIX. 742—form a settlement in Kentire, 743—their invasions of Ireland, XII. 470, 472—Scotch settlers in Ulster, 479. See Scotland.
- Scott (C. H.), his work on the Danes and Swedes, XX. 865.
- (DAVID), painter, XIX. 812—his picture of Vasco da Gama, X. 393.
- (General), Mexico taken by, XIV. 714.
- (JOHN, BARON ELDON), chancellor, XIX. 813.
- (J. Corse), on the dentition of the elephant, III. 106; XVI. 474, 475.
- (MICHAEL), wizard, XIX. 817.
- (THOMAS), divine, XIX. 818.
- (SIR WALTER), XIX. 818—on the spectre that appeared to Brutus, III. 210, n. 3—on apparitions, 318, 320, 321—his connection with Mr Constable, VII. 299—sum of money received for his works, 356—his article on the drama, in this work, VIII. 137, n.—his monument in Edinburgh, 406—on licensing plays, IX. 539, n. 1—his intimacy with Hogg, the Ettrick Shepherd, XI. 557—letter from Hogg to, 558, n.—his mind pre-eminently of a historical cast, 546, 548—Lockhart's Life of, XIII. 548—Leyden's assistance to, 354—his attention to the minute peculiarities of nature, XVIII. 94—poetry of, 125—as a novelist, XIX. 280—on the character of Swift's Examiner, XVI. 183—on Joanna Baillie, IV. 369—on the works of Fielding, IX. 539, 540, 541; Richardson, XIX. 272; Sterne, 274; Mackenzie, 275; Walpole, 276; Charlotte Smith, 279; Maturin, 277; Le Sage, 288—imitators of, 281—an occasional contributor to the Edinburgh Review, 820—his intercourse with Southey, XX. 455—his notices of Swift, 874, 875—his biography of Swift, 878—his notice of Professor Wilson, XXI. 876—Wielkie's picture of him and his family, 867.
- (WILLIAM, LORD STOWELL), XIX. 825—on collisions at sea, VII. 131—on

SCO—SCY

- the law of divorce, VIII. 71—on the marriage laws, XII. 51 *et seq.*
- Scotus (Marianus), his story of Pope Joan, XII. 714.
- See Duns Scotus.
- See Erigena.
- SCOU GAL (Henry), XIX. 826.
- Scoular's grubber, II. 272.
- Scouring of wool, IV. 769; VIII. 275; XXI. 921—silk, IV. 770; VIII. 276—cotton, 277.
- of harbours, XI. 223—of rivers, XVI. 73.
- Scrafton (Luke), on the practice of burying money in India, XVIII. 471.
- Scrain's hive, III. 295.
- Scraper, engraver's, VIII. 803.
- Screamer, bird, XVI. 807.
- Screeds, in plastering, V. 743.
- Screw, XIX. 827; XIV. 397—screw-like motion, 389—differential screw, 401.
- propeller, introduction of, XX. 137, 639—definition of, 657—pitch of the screw, *ib.*, 659—slip of, *ib.*, 657—action of, *ib.*—different forms, 658, 659—paddle-wheels so far superseded by, 640—its merits compared with those of the paddle-wheels, 661—screw-engines, 642 *et seq.*—horse-power of, nominal and indicated, 644—spare gear for, 667.
- steam-ships, in royal navy, XVI. 95; XX. 137, 670.
- Screw-piles, XX. 753.
- Screw-pine, V. 77—order of plants, 214.
- Scribbling of wool, XXI. 922.
- SCRIBE, XIX. 827.
- Scribing, in joinery, V. 751.
- SCRIMZEOR, or Scrimgeour (Henry), XIX. 827.
- SCRIPTURE (HOLY), XIX. 828. See Bible, Old and New Testament, Vol. I. Dissertation III., Pentateuch, Moses, Joshua, Paul, Peter, &c.
- Scrobicularia, genus of mollusks, XV. 350.
- Scrobodus, genus of fossil fishes, XII. 338.
- SCROFULA, XIX. 842; IX. 421.
- Scroll, in architecture, III. 512—in joinery, XII. 814—in heraldry, XI. 338.
- Scrope (William), on deer-stalking, XX. 212.
- Scrophulariaceæ, nat. order of plants, V. 202.
- Scrotum, its anatomy, III. 69.
- SCUDÉRI (Georges de), XIX. 842.
- (MADELEINE de), XIX. 842.
- Scudo, coin, XV. 443.
- Sculptor, a blind one, IV. 781.
- SCULPTURE, XIX. 843—Chinese, VI. 582—Egyptian, XVII. 47—Danish, XIX. 696—Swedish, 702—casting in, VI. 323; of bronze statues, V. 676—foundry of statues, IX. 843—Elgin marbles, VIII. 632—in the Crystal Palace, Sydenham, XX. 892—value of photography to, XVII. 553. See Statues.
- Scultetus on surgery, XX. 818.
- Scuppernong grape, XXI. 888.
- SCUPPERS of a ship, XIX. 869.
- Scurf, in cattle and sheep, XXI. 578.
- SCURVY, XIX. 869—chemical theory of, VIII. 24—cured by the use of citric acid, XVI. 106—Capt. Cook's success in curing, VII. 341.
- SCUTARI, XIX. 869; VII. 301—hospital at, during the Russian war, 506 and *n.*—barracks at, XXI. 371.
- town in Albania, XIX. 869.
- Scutcher, VII. 443.
- Scutching of flax, XIII. 494—silk, XX. 286.
- Scutella, fossil echinoidea, XVII. 99, 100.
- Scutellaria, genus of insects, IX. 161.
- Scutellina, fossil echinoidea, XVII. 100.
- Scutibranchiata, order of mollusks, XV. 380.
- Scutigera, genus of myriapods, XV. 749.
- SCUTTLES in a ship, XIX. 869.
- Scydmanus, genus of insects, IX. 113.
- Scylax of Caryades, X. 467.
- SCYLLA, town of Naples, XIX. 869; XX. 241.

SCY—SEA

- SCYLLA and CHARYBDIS, XIX. 869; XX. 241, 244.
- Scyllæa, genus of mollusks, XV. 371.
- Scyllarus, genus of crustacea, VII. 541.
- Scylliidae, family of fishes, XII. 321, 323.
- Scylliodus, genus of fossil fishes, XII. 342.
- Scyllis, ancient sculptor, XIX. 853.
- Scyllium, genus of fishes, XII. 323.
- Scymnidae, family of fishes, XII. 325.
- Scymnus, genus of fishes, XII. 325.
- of Chio, X. 467.
- Scyphia, fossil sponges, XVII. 92, 93.
- Seyris, genus of fishes, XII. 297.
- SCYROS, island, XIX. 869.
- Seyrtes, genus of insects, IX. 107.
- Scytalophis, genus of fishes, XII. 233.
- SCYTHE, XIX. 869—reaping with the, II. 313—Hainault scythe, *ib.*
- SCYTHIA, XIX. 869.
- Scythian bow, V. 251.
- Scythians, II. 776; IX. 388—their invasions of the Eastern empire, VII. 317.
- Scythrops, genus of birds, XVI. 778.
- Scytodes, genus of arachnides, III. 380.
- Sea, X. 483—influence of the sun's rays on, VI. 777—temperature at different depths, *ib.*; XIV. 644; XVII. 577—freezing of, VII. 100—currents in, 593; VI. 772; XVII. 577; XVIII. 176—embankments against, VIII. 643—seas of Europe, IX. 385—right of all nations to the use of, XIII. 284—high and narrow seas, 285—luminousness or phosphorescence of, 458; XVII. 574—its influence on climate and health, XIV. 444—water of, XV. 38; XVII. 572; XIX. 585—its effects on rocks, XV. 139—extent, mean depth, entire content and mass of, XVII. 572—specific gravity of the water of, *ib.*; XII. 89—colour of, XVII. 574—depth and form of the bottom, 574—subdivisions of, 576—proximity of volcanoes to the sea, XXI. 604; cause of this, 606; ancient volcanoes remote from the, *ib.* See Ocean, Baltic, Mediterranean, &c., Tides, Waves, &c.
- Sea-air—contains no muriatic acid, IX. 415.
- Sea-apprentices, XIV. 349.
- Sea-bear, XIV. 173.
- Sea-breeze, III. 737; XIV. 649.
- Sea-cat, fish, XII. 309.
- Sea-fox, fish, XII. 322.
- Sea-hare, XV. 372.
- Sea-horse, mammal, XIV. 169.
- fish, XII. 314.
- Sea-ice, XVII. 583, 584; XVIII. 176.
- Sea-jellies, zoophytes, XXI. 995.
- Sea-kale, culture of, XI. 742.
- Sea-lights. See Lighthouses.
- Sea-lion, XIV. 172.
- Sea-lochs. See Fiords.
- Sea-pens, polypes, XXI. 1003.
- Sea-pink, V. 203; XI. 748.
- Sea-scurvy, XVI. 105.
- Sea-serpents, XVII. 634; XIX. 65.
- Sea-unicorn, XIV. 229.
- Sea-urchins. See Echinodermata.
- Sea-walls, VIII. 645.
- Sea-weed, order of plants, V. 217—as manure, II. 302, 406—analysis of, 406. See Algae, Fuci.
- Sea-wolf, fish, XII. 309.
- Sea-worthiness, in insurance, XII. 420.
- Seal, on ancient diplomas, VIII. 42—arms on seals, XI. 322.
- in zoology, XIV. 171—dentition of, XVI. 462, 463—skins and fur of, X. 348—oil from, XVI. 493—in the Caspian, Black Sea, and Aral, VI. 311.
- Islands, XIII. 531.
- Sealing-wax, XXI. 779.
- SEAMANSHIP, XX. 1—ballast, IV. 397. See Navigation, Navy, Sailing.
- Seamen. See Sailors.
- Search, right of, XVI. 159; XIII. 288.
- Seasoning of timber, VIII. 209; XX. 163, 169, 170. See Timber.
- Seasons, cause of the, IV. 11—variation in length, 17—temperature of, supposed to be influenced by the solar spots, 30, 53

SEA—SEE

- Egyptian, VIII. 449—in Hindustan, XI. 450.
 Seat, in riding, XI. 675, 677—seats, in landscape gardening, XVII. 773.
 Seaton (Sir Christopher), VIII. 239.
 Seb, Egyptian deity, VIII. 437.
 Seba (Albert), his Thesaurus, containing figures of insects and birds, IX. 4; XVI. 726.
 Sebaceous glands, II. 833, 834.
 Sebak, Egyptian deity, VIII. 437.
 Sebastes, genus of fishes, XII. 220, 283.
 SEBASTIAN (Dom.), XX. 29; XVIII. 383, 384.
 SEBASTIANO, Venetian painter, XX. 29.
 SEBASTOPOL, or Sevastopol, XX. 29; II. 435; IV. 743; VII. 505—harbour of, IV. 744—siege of, IX. 815, 826, 837; XIX. 504; XXI. 375—bombardments of, ib.; XIX. 508, 509—capture of, 510.
 Seben, Egyptian deity, VIII. 439.
 SEBENICO, town in Dalmatia, XX. 29.
 Sebesten, order of plants, V. 201.
 Sebha, town in Fezzan, IX. 528.
 Sebiz (Melchior), on medical jurisprudence, XIV. 423.
 Sebonde. See Raymond of Sebonde.
 Seboo, river, XV. 594.
 SE-CHUEN, province of China, XX. 29.
 Secale cornutum, a poison, XIV. 439. See Ergot of Rye.
 SECANT, XX. 29; XXI. 338.
 Secchi (Prof.), his experiments on the sun's heat, IV. 88—on the moon's surface, 89—his micrometer, XIV. 753.
 SECEDERS, XX. 29; XVIII. 493, 498.
 SECKENDORF (Veit Ludwig von), XX. 30.
 SECKER (Thomas), archbishop of Canterbury, XX. 30.
 Second-sight, III. 318.
 Secondaries in astronomy, IV. 2.
 Secondary epoch, in geology, XV. 195, 205—rocks, XVII. 588—corals belonging to, 97—in Spain, XX. 485.
 —qualities of body, XIV. 570.
 Seconds, in the graduation of the quadrant, XXI. 339.
 Secretary, bird, XVI. 745; II. 218.
 Secretary-at-war, British, III. 663.
 Secretion, XVII. 664—secreting cells, 650—anatomy of the organs of, in man, III. 67—in brutes, 113—of plants, V. 72, 73, 75; influence of leaves on, 106.
 Secretiveness, XVII. 562, 673.
 SECT, XX. 30—sects of Mohammedans, XV. 305—places of worship of the different sects in Scotland, XIX. 801.
 Section, in architecture, III. 512—in geometry, (see Conic Sections, &c.)—mode of tracing vertical sections, in physical geography, IV. 468.
 Sectional method of teaching, XV. 828.
 SECTOR, XX. 30—astronomical or equatorial, ib.—zenith, ib.—Ramsden's, XXI. 335; Airey's, ib.—of a circle, X. 513.
 Sectoral barometer, IV. 455.
 Secular equations, table of, IV. 121.
 SECUNDERABAD, town in India, XX. 30.
 SECUNDUS (Joannes Nicolaus), Dutch poet, XX. 31.
 Securifera, family of insects, IX. 183.
 SECUTORES, gladiators, XX. 31.
 SÉDAN, town in France, XX. 31.
 Sedan-chairs, first introduction of, into England, II. 653.
 SEDBERGH, town in Yorkshire, XX. 31.
 Sedge, order of plants, V. 215.
 SEDGEFIELD, town in Durham, XX. 31.
 Sedgemore, battle of, V. 435; XX. 411.
 Sedgmoor, measurement of a trigonometrical base on, XXI. 331.
 Sedgwick (Prof.), on English boulders, VII. 723—on joints in rocks, XV. 164—on cleavage, 170—on the Silurian rocks of Wales, 197—on the rocks of the Permian period, 205—on the geology of Westmoreland, XXI. 841.
 SEDITION, XX. 31.
 SEDLEY (Sir Charles), XX. 32.
 Sedulius, XII. 465, 466.
 Seebeck (Dr A.), on optics, XVI. 543, 636.
 —(Dr Thomas), I. 916—thermo-electricity discovered by, ib., 976; VIII.

SEE—SEL

- 532; XXI. 649—on the polarising structure in heated glass, I. 912—on the prismatic spectrum, 954; XIII. 452; XVI. 593—on chromatics, VI. 643, 657—on magnetism, XIV. 10, 27, 30—on optics, XVI. 540, 543, 549 *et seq.*—on polarisation in fluids, I. 910—on electromagnetism, XXI. 638—his electrical discoveries, 649 *et seq.*
 Seed-lac, XIII. 141.
 Seed-oil, XVI. 494.
 Seed-pearl, XVII. 356, 357.
 Seed-vessel, V. 136.
 Seedlings, XVII. 769.
 Seeds of plants, V. 139—transformations in, 142—modes in which they are scattered, 162—physiology of, 161—vitality of, 163—of agricultural crops, II. 336—seed-wheat, 306—propagation by, IX. 693, 702; XVII. 767—of the pine and fir tribe, 767—leguminous, 769—cottony and other soft seeds, ib.—value of the imports of, VIII. 735—animalcules said to spring from, III. 200, 204, 211.
 Seedytoe, XXI. 562.
 SEELAND, XX. 32. See Zealand.
 Seeman (Berthold), on the colouring of tea, XXI. 87.
 SÉES, town in France, XX. 32.
 SEETZEN (Ulrich Jaspas), traveller, XX. 32.
 Segar, garter king of arms, XI. 322.
 SEGESTA, city of Sicily, XX. 32, 39, 243.
 Segestan. See Seistan.
 Segestes, X. 575.
 Segestria, genus of arachnides, III. 379.
 SEGMENT of a circle, XX. 33; X. 513.
 Segner (Prof.), original principle propounded by, I. 720—on capillary attraction, 731; XII. 97—on cohesion, VII. 57, 61—his table of the forms of the curve, 62.
 SEGNI (Bernardo), historian, XX. 33.
 SEGO, town in Bampurra, XX. 33; II. 228.
 SEGORBE, town in Spain, XX. 33.
 SEGOVIA, Spanish province, XX. 33.
 —city, XX. 33—aqueduct at, III. 336—canal of, XX. 491.
 Segraisiana, II. 739.
 SEGUIDILLA, XX. 33.
 Seguler (M.), X. 175.
 Seguin (M.), on bathing, IV. 500—his theory of tanning, XIII. 304—on stratification in electric discharges, XXI. 630.
 Segur (M.), X. 157.
 SEIFHENNERSDORF, town in Saxony, XX. 33; XI. 314.
 SEIGNIOR, or Signior, XX. 33.
 SEIGNORAGE, XX. 33; VII. 75; XV. 423, 424—table of, under different British sovereigns, VII. 76—Hume on, XX. 341, n. 3.
 SEIGNIORY, XX. 33.
 Seimens, XXI. 373.
 SEINE, French river, XX. 33; X. 240; XVII. 280, 647—fishes found in, XX. 35.—department of France, XX. 34.
 SEINE-ET-MARNE, in France, XX. 34; X. 242.
 SEINE-ET-OISE, in France, XX. 35; X. 242.
 SEINE-INFÉRIEURE, in France, XX. 35; X. 241.
 Seir (Mount), XII. 357.
 Seisachtheia, IV. 195.
 SEISIN, XX. 36; XII. 379.
 Seismograph, electric, XXI. 644.
 SEISTAN, in Asia, XX. 36.
 SEJANT, in heraldry, XX. 36; XI. 333.
 SEJANUS (Lucius Aelius), XX. 36; XIX. 334; XXI. 244, 245.
 Sejour on the moon's atmosphere, IV. 44.
 Selache, genus of fishes, XII. 322, 323, 324—teeth of, XVI. 422.
 Selaginaceæ, nat. order of plants, V. 202.
 Selago, plant esteemed by the Druids, VIII. 188.
 SELBY, town in Yorkshire, XX. 37.
 —(Mr), on birds, XVI. 733, 748, 777, 793, 802.
 SELDEN (John), XX. 37—his Table-Talk, II. 740—his work on the Parian Chronicle, III. 720—on King James's Bible,

SEL—SEM

- IV. 703—on the Chancellor's equity, VI. 411—promoted the publication of Walton's Polyglot Bible, XXI. 695.
 Sele, river, XII. 638; XX. 238.
 Selen copper lead, mineral, XV. 117.
 Selen-sulphur, XV. 123.
 Selenic acid, VI. 478; XV. 64.
 Selenious acid, VI. 478.
 Selenite, mineral, XV. 95.
 Selenium, VI. 478; XV. 64—native, 123.
 Selenography, IV. 89—selenographic charts, VI. 426.
 SELEUCIA, ancient cities so named, XX. 38.
 —PIERIA, XX. 38—coins of, XVI. 379.
 —TRACHEOTIS, XX. 38.
 SELEUCIA-ON-THE-TIGRIS, XX. 39.
 Selenciani, heretics, XI. 352.
 SELEUCIDÆ, era of, XX. 39; VI. 671—dynasty of, XX. 910, 911, 904.
 Seleucis, in Syria, XX. 904—coins of, XVI. 379.
 SELEUCUS I., XX. 39.
 —Nicator, XX. 38, 39, 910; XVII. 434—Antioch founded by, III. 273.
 Self-esteem, XVII. 562.
 Self-knowledge, its importance taught by Socrates, XX. 396.
 Self-love, I. 360—analysis of, 382—significations assigned to, by Hartley, 445—Aristotle on, III. 564.
 Selfish system in morals, XV. 551.
 Self's pump, XII. 175.
 Selgovæ, Caledonian tribe, VI. 74; XIX. 742.
 SELIM I. and II., emperors of Turkey, XX. 39, 911; III. 363; XXI. 369.
 —III., reign of, XXI. 370—deposed, 372—strangled, 373.
 SELIMNO, town in Turkey, XX. 39.
 SELINUS, in Sicily, XX. 39—taken by the Carthaginians, VI. 281—coins of, XVI. 366—sculptures of, XIX. 853.
 SELJOOK, Turkish tribe, XX. 39; III. 744.
 SELKIRK (Alexander), XX. 39; VII. 697; XIII. 13.
 —Scotch burgh, XX. 40.
 SELKIRKSHIRE, XX. 41—agricultural statistics of, XIX. 796, 797, 798—population, 799.
 Sella (Joseph), his photographic process, XVII. 799.
 SELLASIA, town of Laconia, XX. 42—battle of, 502.
 Selligues (M.), his achromatic object-glasses, XIV. 777.
 SELVA, town in Spain, XX. 42.
 Semaphore, at Portsmouth, XVIII. 378—on railways, 777, 778.
 Semblis, genus of insects, IX. 179.
 Semempsês, Egyptian king, VIII. 454.
 Semen, animalcules in, XXI. 975—seminal tubes, ducts, and vesicles, III. 69—fluid, XVII. 683.
 SEMENDRIA, town in Turkey, XX. 42.
 Semennood, in Egypt, VIII. 497.
 SEMI-ARIANS, XX. 42.
 SEMICIRCLE, XX. 42; X. 513.
 SEMICOLON, XX. 42; XVIII. 658.
 SEMIDIAMETER, XX. 42; X. 513.
 Semionotus, genus of fossil fishes, XII. 334; XVII. 127.
 SEMIPALATINSE, in Asiatic Russia, XX. 42; XIX. 550.
 SEMI-PELAGIANS, XX. 42; XVIII. 477. See Pelagius.
 SEMIRAMIS, queen of Assyria, XX. 42; III. 778; XV. 764—Babylon said to have been founded by, IV. 340.
 Semitic languages, XIII. 209, 210, 225; classification of, XVII. 535—philology extended to, 533—sub-semetic languages, XIII. 226.
 —nations, XI. 541; IX. 351.
 SEMITONE, XX. 43. See Music.
 SEMLER (Johann Salomon), theologian, XX. 43; XIX. 828; XXI. 183.
 SEMLIN, town in Austria, XX. 43.
 Semnopithecus, genus of mammalia, XIV. 140.
 Sempach, battle of, XX. 884.
 Sempronius, Roman consul, VI. 295.

SEN—SEP

- SENAC (Jean Baptiste), physician, XX. 43.
 Senan (St), VI. 754.
 Senarmont (General), III. 686.
 —(M. de), on the conduction of heat, I. 952—on optics, XVI. 550, 654, 667.
 Senarmontite, mineral, XV. 113.
 SENATE, XX. 43—of Belgium, IV. 612—Roman, XIX. 296, 297, 316, 317, 323—of the United States, XXI. 429—senate and senatus academicus in universities, 462, 471, 486, 481.
 Senators, XX. 43, 44—badges and privileges of Roman, 44.
 Senderos on gunnery, XI. 110, 135, 145.
 Senebier, on the gaseous exhalations of plants, V. 105—on the effects of light, XIII. 459, 460.
 SENECA (L. Annæus), the philosopher, XX. 45; XIX. 337—on comets, I. 568—tragedies of, VIII. 141—on optics, XVI. 521—on the surmullet, XII. 279.
 —(M. ANNÆUS), rhetorician, XX. 44.
 Senefelder (Alvis), inventor of lithography, XIII. 510.
 SENEGAL, river, XX. 48; II. 214; XVII. 647.
 —French colony, XX. 49; II. 226—Adanson's observations there, 130.
 SENEGAMBIA, in Africa, XX. 49; II. 226.
 Senelops, genus of arachnides, III. 381.
 SENESCHAL, XX. 51.
 Senior (Nassau W.), on a provision for the poor, XVIII. 296, n. 1.
 SENLIS, town in France, XX. 51.
 SENNA, a drug, XX. 51—plants yielding, V. 191.
 —African town, XV. 670; XX. 405.
 —Persian town, XX. 307.
 SENNAAR, in Africa, XX. 51; II. 224, 225—Bruce's residence at, V. 690.
 Sennacherib, III. 778.
 Sennebier (M.), on Rousseau, XIX. 449, 450.
 SENNERTUS (Daniel), physician, XX. 52.
 SENS, French town, XX. 52.
 Sensation, XIV. 563, 567; XVII. 670, 671; XIX. 111, 113—Locke on the ideas that result from, I. 110, 111, 112—peculiar to animals, III. 170—acute sensibility of ants, 262—in the bee, IV. 574—Condillac on, VII. 236—Plato's views of, XVII. 801. See Senses.
 —(organs of), in man, III. 3, 42—in brutes, 94—crustacea, VII. 538.
 SENSATIONALISM, or Sensualism, XX. 52.
 Sense (common), I. 403—Reid on the principles of, XIX. 2.
 —(moral), I. 364; XIV. 580; XV. 544. See Conscience.
 Senses, XIV. 563, 566; XVII. 677—those of man and other animals compared, III. 176, 178—their acuteness in the Arabs, 348; and in the blind, IV. 773, 777—Aristotle on the, III. 549—disorders from irritation of the nerves of the, XVII. 700—of ants, III. 262; insects, IX. 44; fishes, XII. 218—alleged transference of the senses in mesmeric sleep, XX. 424, 429, 432; rests on no satisfactory evidence, 442, 446. See Sensation, Hearing, Smell, Taste, Touch, Sight.
 Sensibility, XVII. 670, 671.
 Sensitive plants, V. 108.
 Senso-motory electricity, XVII. 671.
 Sensorium, commune, XVII. 558, 677. See Brain.
 Sentiments, in phrenology, XVII. 562.
 Sentinum, battle of, XIX. 305.
 Sepals, leaves of the calyx, in plants, V. 117, 122.
 Separate system, in prison discipline, XVIII. 573, 582.
 Sepedon, genus of insects, IX. 255.
 Sepsis, Egyptian king, VIII. 455.
 Sepia, genus of mollusks, XV. 398, 395, 397—fossil, XVII. 114.
 —colour, drawing in, VIII. 173.
 Sepiada, family of mollusks, XV. 398—fossil, XVII. 113.
 Sepiola, genus of mollusks, XV. 400.
 Septentiothis, genus of mollusks, XV. 400.
 SEROURY, or Sîpury, in Hindustan, XX. 52.

SEP—SER

SEPOYS, XX. 52—insurrection of, in 1857, XVI. 301; measures for suppressing, 312; in the Punjab, XVIII. 693.
 Sepp (Chr.), his work on insects, IX. 5.
 Seppings (Sir R.), his improvement of the block under ships in graving-dock, VIII. 76—his improvements in ship-building, XVI. 96, 97, 98—on diagonal trussing, XX. 181, 182, 190.
 Seps, genus of reptiles, XX. 38.
 Sepsis, genus of insects, IX. 251.
 Septa, in botany, V. 131.
 — See Ceuta.
 Septaria, cement made from, XX. 714.
 SEPTEMBER, XX. 52—gardening calendar for, XI. 760.
 Septennial law, in France, X. 186.
 — parliaments, act for, V. 455—attempt to repeal it, 458.
 SEPTUAGESIMA, XX. 52.
 SEPTUAGINT, XX. 52; XIX. 839; IV. 698; XI. 552; XII. 768; XVII. 519.
 SEPULCHRE, regular canons of St, XX. 56.
 — (KNIGHTS OF THE HOLY), XX. 56.
 — See Burial, Tomb.
 SEPULVEDA (Juan Ginez de), XX. 56.
 SEQUANI, XX. 56.
 SEQUESTRATION, XX. 56; IV. 418.
 SEQUIN, coin, XX. 56; XV. 441, 442.
 SERAGLIO, XX. 56—at Constantinople, VII. 301.
 SERAING, town in Belgium, XX. 56.
 SERAMPOR, town in India, XX. 56—translation of the Scriptures printed at, VI. 237.
 Serapeum, VIII. 502; XIV. 493.
 Seraphim, VI. 527.
 Serapion, ancient physician, XIV. 452; XX. 815.
 SERAPIS, XX. 57; VIII. 502—image of, at Alexandria, II. 469—temple of, VII. 310.
 — fossil mollusks, XVII. 109.
 Seraptia, genus of insects, IX. 134.
 Serassi on the organ, XVI. 711.
 Serbonis (Lake of), VIII. 429.
 Serena (La). See Coquimbo.
 Sirenidae, family of fishes, XII. 318.
 Sirenoidea, fishes, XII. 318.
 SERES, Turkish town, XX. 57.
 — Asiatic people, III. 752; XX. 57, 286.
 Sereth, river, XV. 312.
 Serfs, Russian, XIX. 523.
 Sergan. See Kerman.
 SERGEANT-AT-LAW, XX. 57—at arms, ib.—common, ib.—in the army, ib.; III. 665.
 SERGEL (John Tobias von), sculptor, XX. 57.
 SERGIPE (del Rey), province of Brazil, XX. 57; V. 295.
 Sergius, monophysite, XV. 501.
 Seriatoporidae, zoophytes, XXI. 1005.
 SERICA, in Asia, XX. 57, 286.
 — genus of insects, IX. 125.
 Sericaria, genus of insects, IX. 214.
 Sericomylia, genus of insects, IX. 240.
 Sericostoma, genus of insects, IX. 180.
 SERIES, XX. 57—infinite, in algebra, II. 529—reversion of, 532—in fluxions, IX. 726.
 SERINAGUR, town in India, XX. 57, 308.
 SERINGPATAM, XX. 57—Lord Cornwallis's expedition against, V. 541; XI. 498, 499—stormed by the British, V. 567; XI. 499, 502; XXI. 818—monolithic obelisk at, XVII. 619.
 SERINO, town of Naples, XX. 58.
 Seriola, genus of fishes, XII. 297.
 Seriolella, genus of fishes, XII. 298.
 Serlio, notice of his architectural publications, III. 451.
 SERMIDE, town in Italy, XX. 58.
 Sermon, distinguished from a homily, XI. 606.
 SEROHEE, town in India, XX. 58.
 SERON, town in Spain, XX. 58.
 Serous membrane, II. 838—in the foetus, 839.
 SERPA, town in Portugal, XX. 58.
 SERPENT, musical instrument, XX. 58; XV. 711.

SER—SES

Serpentarius and Serpens, two constellations, IV. 80.
 Serpentiniform apodals, sub-order of fishes, XII. 229.
 SERPENTINE VERSES, XX. 58.
 — mineral, XV. 79—rock, 135; at Portsoy, IV. 413.
 SERPENTS, XX. 58; XIX. 39 *et seq.*—their power of abstinence, II. 52; III. 180—their bones, 87 *et seq.*; XIX. 42, 43—ears, III. 99—teeth and poison fangs, 113; XVI. 431, 432; XIX. 44—effects of their poison, 45; XVIII. 130—theory of its action, XIX. 46—tongue, 47—alimentary canal, ib.—digestion and deglutition, ib.—circulation, 48—respiration, ib.—brain, ib.—general envelope, ib.—colours, 49—production, 50—geographical distribution, ib.; XVII. 634—burrowing, 55—fresh-water, 58—terrestrial, 55—non-venomous, ib.—true, 42—tree, 57—venomous, 63, 67—sea, 65—worm-like, 55—poisonous bites of, XIV. 440—fossil, XVII. 153, 640—of Europe, XIX. 51—America, 54; II. 714—Africa, XIX. 52—Asia, 53—India, XI. 456—Borneo, XIX. 53, 54, 60, 86. See different countries under the head zoology.
 — (Isle of), XIX. 512; IV. 742; XXI. 376.
 Serpent's (The), deception of Eve, XXI. 197.
 SERPUCHOV, town in Russia, XX. 58.
 Serpula, genus of annelides, XI. 294—fossil, XVII. 101.
 Serpularia, fossil mollusks, XVII. 110.
 Serpulites, fossils, XVII. 101.
 SERRA CAPRIOLA, Neapolitan town, XX. 58.
 — do Frio, diamond mines of, VIII. 2.
 SERRANUS (Joannes), XX. 58.
 — genus of fishes, XII. 274, 276—fossil, 343.
 Serrasalmus, genus of fishes, XII. 247.
 SERRAVALLE, Italian town, XX. 59.
 Serre (M.), on harmony, XV. 701, 702.
 Serres (Marcel de), on the araneides, III. 373—on insects, IX. 43—his works on insects, 13.
 Serricornes, family of insects, IX. 104.
 Serripes, genus of mollusks, XV. 349.
 Serropalpidæ, family of insects, IX. 132.
 Serropalpus, genus of insects, IX. 132.
 SERTORIUS (Quintus), XX. 59; XIX. 322; XX. 458.
 Sertulariadae, zoophytes, XVI. 1006.
 Serum of the blood, II. 780, 781, 782; XVII. 664.
 SERVAN (St), town in France, XX. 59.
 SERVANDONI (G. Geronimo), architect, XX. 59.
 SERVANT, XX. 59—servants in factories, XIV. 348; printworks, 349—domestic, ib.—master and, 345; XV. 569—liveried, XIII. 525.
 SERVETUS (Michael), XX. 59—circulation of the blood partially discovered by, II. 760 and *n.*—his execution approved of by Melancthon, VII. 482—Calvin's conduct to, VI. 110.
 SERVIA, XX. 61—alphabet of, II. 614—language, XIII. 214; IX. 392.
 SERVICE, choral, XX. 63.
 Service-tree, XI. 716.
 Servitors, in the University of Oxford, XXI. 456.
 SERVITUDE, Penal, XX. 63; XVIII. 580.
 SERVIUS TULLIUS, XX. 63; XIX. 297, 357.
 Sesamoid bones, II. 829.
 Sesamum, or Sessamum oil, XVI. 495—cultivation of, in Bengal, IV. 649.
 Sesarinus, genus of fishes, XII. 298.
 Sesertesen I., II., III., Egyptian kings, VIII. 456.
 Sesia, genus of insects, IX. 210.
 Sesiades, family of insects, IX. 210.
 Sesöchris, Egyptian king, VIII. 454.
 SESOSTRIS, XX. 63; VIII. 456; XI. 388—architectural remains attributed to, III. 436—army and military exploits of, 620—different names of, ib., *n.* 3—date of his reign, ib., *n.* 5—great ship said to have been built by, VII. 714.

SES—SEY

SESSA, Neapolitan town, XX. 63.
 SESSION (Court of), XX. 63; XIX. 758, 810; VIII. 395—trial of civil cases by jury introduced into, XIII. 24—kirk-session, XVIII. 493.
 SESTERTIUS, Roman coin, XX. 63; VII. 69; XV. 433; XVI. 383.
 SESTINI (Domenico), numismatist, XX. 63.
 Set, meaning of the phrase *taken a set*, XX. 749.
 — or Seth, Egyptian deity, VIII. 438.
 Seth, son of Adam, III. 267.
 Sethee, kings of Egypt, VIII. 461, 462.
 Setheum, temple of, VIII. 509.
 Seti, Egyptian deity, VIII. 436.
 Seton, in surgery, XX. 826; XXI. 559, *n.*—improved kind of, XX. 827.
 Setter-dogs, XX. 218.
 SETTLE (Elkanah), poet, XX. 63.
 — town in Yorkshire, XX. 63.
 Settlement law, XVIII. 299.
 SETUBAL, town in Portugal, XX. 64.
 SEVAJEE, XX. 64—founder of the Mah-ratta state, XI. 479.
 SEVASTOPOL, XX. 64. See Sebastopol.
 Seven, veneration paid to the number, III. 191; XIX. 560.
 — Years' War, XVIII. 652; XIX. 482.
 SEVENOAKS, town in Kent, XX. 64.
 SEVER (St), town in France, XX. 64.
 Severinus (M. A.), XX. 818.
 SEVERN, river, XX. 64, 228; VIII. 716; X. 679; XV. 518; XVII. 647—bore on, XVI. 65—physical characters of, 88—navigation of, X. 680—Severn and Thames Canal, 681; XX. 64.
 SEVERUS, Roman emperor, XX. 65; XIX. 346—Byzantium destroyed by, VI. 43—his visit to Egypt, VIII. 472; Christians there persecuted by, ib.—his expedition against the Caledonians, XIX. 741—his death at York, 742—wall of, V. 379; XIX. 343, *n.*
 — (Cassius), apparition said to have been seen by, III. 310.
 SEVIGNÉ (Marie de Rabutin Chantal, Marquis de), XX. 65—her letters, XVIII. 327.
 SEVILLE, XX. 65—persecution of the Jews at, XII. 780—oranges of, XVI. 700—Columbian library at, XIII. 410—university of, XXI. 492.
 SEVRES (Deux), in France, XX. 66.
 — town in France, XX. 67—porcelain manufactory of, X. 255; XVIII. 437, 438.
 — museum of, XXI. 322.
 Sewel on the Quakers, XVIII. 714.
 Sewerage, or Sewage, XIX. 618—application of, to land, II. 297—meadows near Edinburgh irrigated with, 326—of London, XIII. 678.
 Sewers, building of, V. 734—of towns, III. 495, 497; VIII. 128; XIV. 444; XIX. 618—of Rome. See Cloaca.
 SEWESTAN, in Afghanistan, XX. 67.
 Sewin, bull-trout, XII. 240.
 Sex, III. 170—both sexes in the same individual, 171 (see Hermaphrodite)—neuter sex, in ants, 261—in bees, IV. 570, 571—in reference to annuities, III. 227—mortality less in the female sex than in the male, 230—its influence on insanity, XIV. 536—proportion of their numbers, XV. 622; in Russia, XIX. 521—separation of the sexes, in fox-hounds, XI. 770.
 SEXAGESIMA Sunday, XX. 67.
 SEXAGESIMALS, XX. 67; III. 577.
 SEXTANT, XX. 67; XIII. 687; XVI. 28, 29, 30—causes of error in the use of, 32—its importance in seamanship, XX. 26. See Quadrant, Mural Circle.
 SEXTUS EMPIRICUS, XX. 67—his scepticism, XIX. 707—estimate of his views, 709.
 Sexual organs, in man, III. 69—in brutes, 113—plants, V. 125, 126 *et seq.*, 152.
 Seybert (Dr), on the population of the United States, XV. 608, *n.*; XVIII. 339.
 SEYCHELLES, islands, XX. 68; XIV. 364.
 Seymour (Jane), wife of Henry VIII., VII. 482; VIII. 701, 704.

SEY—SHA

Seymour (Sir Hamilton), his Russian diplomacy, VIII. 40.
 Seymour's mode of training peach trees, XI. 710.
 — rope-machine, XIX. 406.
 SEYNE, French town, XX. 68.
 SÉZANNE, French town, XX. 68.
 SEZZA, or Sesse, town in the Papal States, XX. 68.
 SFAX, town in Tunis, XX. 68.
 SFORZA (Ludovico), XX. 68; XII. 651; XX. 885.
 'SGRAVESANDE, XX. 68. See Gravesande.
 Sgricci (Tommaso), improvisations of, XVIII. 112.
 Shad, fish, XII. 236; IX. 764.
 Shadbolt (George), his microscopic photographs, XIV. 801; XVII. 552—his photographic process, 548.
 Shaddai, name of God, XXI. 189.
 Shaddock, V. 186.
 Shade, in drawing, VIII. 173.
 Shadoof, Egyptian machine for raising water, VIII. 427.
 Shadow, line described on a plane by, VII. 789—blue shadows, XVI. 691.
 SHADWELL (Thomas), dramatist, XX. 68; VIII. 163.
 Shaft, in architecture, III. 512—of coal-pits, VII. 120—of mines, XV. 223—of steam-engines, XX. 655.
 SHAFTESBURY (Earls of), XX. 69. See Cooper.
 — town in Dorsetshire, XX. 69.
 SHAH ADDULAZIM, Persian village, XX. 69.
 SHAHABAD, in India, XX. 69—town, XVII. 18.
 SHAHJEHANPORE, in India, XX. 69—tragedy enacted at, in the sepoy insurrection, XVI. 309.
 Shakers, American Communists, VII. 208.
 SHAKESPEARE (William), XX. 70—anecdote of, at the Globe Tavern, II. 592—portions of his plays taken from Bandello's tales, IV. 411—examples of comparison from, VII. 219, 220—his disregard of the unities, VIII. 153—defence of his comic scenes in tragedy, 154—his merits as a dramatist, 157—seems to have been indifferent to fame, 159—his plays revived by Garrick, 166—Dr Farmer on his learning, IX. 483—his imagination, XVIII. 92—his poetry, 95, 122—alleged to have adopted some of Greene's plays, XI. 37—his tendency to hyperbole, XII. 191—his jug, XVIII. 433—Sir Walter Scott compared with, XIX. 280—editions of, by Capell, VI. 206; Johnson, XII. 799; Pope, XVIII. 331; Rowe, XIX. 451; Malone, XIV. 113; Steevens, XX. 673; Theobald, XXI. 180—his share in the authorship of the Two Noble Kinsmen, XX. 495—birth and burial-place of, 747—creator of the English drama, XXI. 165—treatment of his plays in the seventeenth century, 171—Voltaire's estimate of, 667.
 — Tunnel, near Dover, XVIII. 761.
 Shale, XV. 83, 142, 169—bituminous, 83; II. 638.
 Shallot, culture of, XI. 741.
 Shalmaneser, III. 778; XXI. 405.
 SHAMAKA, or Tchamakha, in Asiatic Russia, XX. 90; XIX. 551.
 Shame, almost unknown among the American savages, II. 693.
 Shamo, X. 690—desert of, XVII. 614.
 SHAN-SI, province in China, XX. 92.
 SHAN-TUNG, province in China, XX. 92.
 SHANGHAI, XX. 91—opened to British commerce in 1842, VI. 597—exports and imports of, 591—silver exported from England to, XVIII. 472.
 SHANNON, Irish river, XX. 91; VI. 753; X. 389; XII. 505—navigation of, XIX. 422—source of, XIII. 327, 487—salmon fisheries, IX. 619.
 Shap-fells, XXI. 842—abbey, 844—wells, ib.
 SHAPINSHAY, one of the Orkney islands, XX. 92; XVI. 719.

SHA—SHE

Shapoor. See Sapor.
 Shápúr, ancient monuments at, XVII. 433.
 Sharks, XII. 321 *et seq.*—odontology of, XVI. 422—distribution of, XVII. 635—shark-fishing in Iceland, XII. 203; in Ireland, IX. 634—in the Indian seas, XI. 456—Port-Jackson shark, XVII. 117—fossil, XII. 341; XVII. 117, 118. See Squalidæ.
 Sharon, in Palestine, XVII. 182.
 SHARP (Abraham), XX. 92; I. 699 and *n.* 2.
 — (GRANVILLE), XX. 93—his opposition to the slave trade, 321—settlement for negroes at Sierra Leone suggested by, 272.
 — (JAMES), archbishop of St Andrews, XX. 93—his hostility to the Covenanters, V. 428—Mitchell's attempt to assassinate him, 429—murder of, 430.
 — (JOHN), archbishop of York, XX. 93.
 — (WILLIAM), engraver, XX. 94—a follower of Joanna Southcott, 454.
 — on surgery, XX. 819.
 SHARPE (Daniel), geologist, XX. 94—on the geology of the neighbourhood of Lisbon, XIII. 507, 508—on the effect of cleavage on fossils, XV. 179—on foliation, 180.
 — and Roberts, their self-acting mule, VII. 445.
 — (Dr), on the causes of alterations in language, VIII. 798, *n.* 5.
 — (Samuel), his anecdotes of the poet Rogers, XIX. 246, *n.*
 — (William), his work on Rogers' Recollections, XIX. 248.
 Sharpey (Dr), his system of anatomy, II. 770—detection of the imposture of a clairvoyant by, XX. 439—on echinoderms, XXI. 983, 992, 993.
 Shary, river, V. 51; XVI. 270. See Tschadda.
 SHASTER, XX. 94; I. 491.
 SHATZK, town in Russia, XX. 94.
 Shavings of wood, electricity of, VIII. 564.
 SHAW (Dr Thomas), XX. 94—ignis fatuus observed by, XIII. 457.
 — (Dr), on the harvest bug, III. 389—on the hamster, XIV. 183—his General Zoology, XVI. 730—on tortoise-shell, XIX. 20—on the gecko, 36—on the camoleon, 37.
 — (John), on the spawning beds of salmon and trout, IX. 589, *n.* 3—his experiments proving that parr are young salmon, 591, 592.
 Shawir, VIII. 479.
 SHAWLS, XX. 94—Cashmere, VI. 309; XIV. 211; XXI. 274, 906—French, X. 252—Persian, XVII. 424—manufacture of, at Paisley, 89—Manchester, XIV. 254.
 Sheaf, in heraldry. See Garbe.
 Sheale (Richard), XIX. 268.
 Shearing of sheep, II. 352.
 — in woollen manufacture, XXI. 923.
 Shearman (C. J.), on the sanitary state of Sheffield, XX. 98.
 Shears, for cutting iron, XII. 561.
 Sheath-bill, bird, XVI. 808.
 Sheathing of ships, V. 619; VII. 351, 672, 542; XVI. 96; XX. 118, 174, 195.
 Sheave, XIV. 401—in block-making, IV. 786.
 Sheba, X. 460, *n.*; III. 355—ruins of, 356.
 Shebeck, Egyptian kings, VIII. 464.
 SHEE (Sir Martin Archer), XX. 94.
 Sheep, II. 345; XIV. 212; XVII. 632—of America, II. 713—Arabia, III. 347—New South Wales, IV. 280—Derbyshire, VII. 755—Dorsetshire, VIII. 111, 112; II. 346—Durham, VIII. 267—county of Down, 123—England, 723—Lincolnshire, XIII. 491; II. 345—France, X. 248—Germany, 586—Iceland, XII. 200—Ireland, 518—Huntingdonshire, 49—Leicestershire, XIII. 320; II. 345—Romney Marsh, XIII. 66; II. 346—Isle of Man, XIV. 244—Scotland, XIX. 798—Spain, XX. 489—Palestine, XVII. 191—Papal States, 242—Sweden,

SHE—SHE

XX. 861—Bakewell's improvements on, II. 345; XIII. 320; Ellman's, II. 346—Cheviots, *ib.*, 347—Cotswold, 346—black-faced, 347; VIII. 724—cross-breeds, II. 347—general management of, 347, 350—salving, or bathing, 348—feeding, 349—shearing, 352—South Downs, XX. 839—legislation against excessive sheep husbandry, XXI. 909—gadfly of, IX. 245—teeth of, XVI. 466; times of appearance of the permanent teeth, 468—fat of, 493—flesh, as food, IX. 762—foot-rot in, XXI. 563—leg-evil, *ib.*—sheep-bot, 569. See Veterinary Science, Wool.
 Sheep-skin leather, XIII. 305.
 Sheep's head, fish, XII. 286.
 Sheer, in a ship's deck, XX. 180; sheer-plan, 185.
 SHEERNESS, town in Kent, XX. 95—dock-yard at, VIII. 82—Artesian well at, III. 681—population, XIII. 67.
 Sheet-glass, X. 664.
 Sheet-lead, V. 755.
 Sheet-lightning, VIII. 587.
 SHEFFIELD, XX. 95—hardware manufactures at, VII. 600, 601; VIII. 729—consumption of ivory, XII. 664.
 — (JOHN), Duke of Buckingham, XX. 98; XVIII. 324 and *n.*—his Rehearsal, VIII. 202—monument to Dryden erected by, 203.
 Shegkuis, blind author, IV. 779.
 SHEHR, town in Arabia, XX. 99.
 — Zaur, town in Kurdistan, XX. 409.
 SHEIL (Richard Lalor), XX. 99—on combinations in Ireland for Catholic emancipation, V. 653—on the inactivity of ministers at that crisis, *ib.*—his co-operation with O'Connell in obtaining Catholic emancipation, XII. 501—his report on reforming the mint, VII. 82.
 — on Persia, XVII. 427, 428.
 SHEKEL, XX. 100; VII. 66.
 SHELBOURNE (Earl of), XX. 100—his administration, V. 502, 505; IX. 852; XVII. 730, 731.
 — in Nova Scotia, XVI. 345.
 SHELDON (Gilbert), archbishop of Canterbury, XX. 100.
 — on the lymphatics, II. 766, 803.
 Sheldonian theatre at Oxford, XVII. 35.
 Shelf-pieces, in ship-building, XX. 186.
 Shell, in gunnery, XI. 142—improved method of throwing, XX. 28—shell moulding, VI. 185. See Gunnery, Artillery.
 Shell-fish, III. 191; VII. 537—as food, IX. 765—supply of, to the London market, IX. 649.
 Shell-gold, X. 703.
 Shell-lac, the best insulator in electricity, VIII. 540. See Lac.
 Shell-marl and shell-sand, as manure, II. 303; XIII. 681.
 Shell-traps, IX. 831.
 Shelley, fish, XII. 243.
 — (MARY WOLLSTONECRAFT GODWIN), XX. 104—her memoirs of Shelley, 102—character of her Frankenstein, XIX. 278.
 — (PERCY BYSSHE), XX. 100, 840—his poetry, XVIII. 126—his intimacy with Byron, VI. 39.
 Shells, calcareous coverings of the mollusca, XV. 319 *et seq.*—fossil, XVII. 103 *et seq.*; XV. 202 *et seq.*—Mr Cuming's collection of, 328, 329—of chelonian reptiles, III. 87—bright colours of tropical, XVII. 636—faint colours of deep sea, *ib.*—fossil, disbelief of their marine origin by Voltaire, XXI. 666.
 Shelluhs, African people, XV. 594.
 Shelvoek (Captain George), on California, VI. 97.
 Shem, descendants of, VIII. 46.
 SHENDY, town in Nubia, XX. 104.
 SHEN-SI, Chinese province, XX. 104.
 SHENSTONE (William), XX. 104—judicious reflections of, I. 119, *n.* 2—poetry of, XVIII. 124.
 Shepherd, II. 348, 351 *et seq.*

SHE—SHI

Shepherd invasion of Egypt, VIII. 455—origin of the shepherds, 456—shepherd kings, 457—their departure from Egypt, 460.
 — (Mr), on the improvements of the Danube, XVI. 63.
 Shepherd's electrical clocks, VII. 27.
 Sheppey (Isle of), XIII. 64, 66—fossil crustacea of, XVII. 102.
 SHEPTON-MALLET, town in Somerset, XX. 105.
 Sherard (William), VIII. 29.
 SHERBET, XX. 105.
 SHERBORNE, town in Dorsetshire, XX. 105.
 SHERBURN, in Yorkshire, XX. 105.
 SHERBURNE (Sir Edward), XX. 105.
 Shere, in coinage, VII. 72, 75; XV. 425.
 Sheribon, in Java, VI. 527.
 SHERIDAN (Frances), XX. 106.
 — (Mr), his process of distillation, VIII. 50.
 — (RICHARD BRINSLEY), XX. 106—his speech against Mr Hastings, V. 523—on the French Revolution, 535—on the French war, 551—on the expedition to Holland, 573—on the peace of Amiens, 586, 589—part taken by, in the trial of Warren Hastings, XI. 239—comedies of, VIII. 166—his share in Drury Lane Theatre, XXI. 174.
 — (Dr THOMAS), XX. 110.
 — (THOMAS), XX. 111.
 Sherif, Arabian title, III. 350.
 SHERIF-ED-DEEN-YEZDI (Moolah Ali), historian, XX. 112.
 SHERIFF, XX. 112; VII. 467; VIII. 774—of London, XIII. 677—sheriff-courts, in Scotland, XIX. 811—sheriff-substitute, *ib.*
 — (Mr), on the culture of the willow, IV. 488.
 — (Patrick), on farming in East Lothian, II. 368.
 Sheriffmuir, battle of, V. 453; VIII. 251.
 SHERLOCK (William), divine, XX. 112.
 — (Dr THOMAS), bishop, XX. 112.
 Sherry wine, XXI. 884, 951—alcohol in, 889, 890.
 SHERWIN (John Keyse), engraver, XX. 112.
 — mathematical tables of, XIII. 555.
 Sherwood Forest, XVI. 340.
 Sheshouk, or Sheshak, Egyptian king, VIII. 463.
 SHETLAND, islands, XX. 112—cattle, II. 343—aurora borealis IV. 242—duns in, VIII. 244—cod and ling fisheries, IX. 646—herring fisheries, 640, 642—agricultural statistics, XIX. 796, 797, 798—population, 799.
 — (South), XVIII. 181.
 Shiah, Mohammedan sect, XVII. 428.
 SHIELD (William), musical composer, XX. 114; XV. 716.
 — XX. 115; V. 722; III. 632.
 — in heraldry, XX. 115; XI. 321, 323, 324.
 — of the Thames Tunnel, I. 879.
 Sheldrake, bird, XVI. 817.
 SHIELDS (North and South), XX. 115.
 Shelducks, birds, XVI. 817.
 SHIFFNAL, town in Shropshire, XX. 115.
 Shift, in ship-building, XX. 184.
 Shiites, Mohammedan sect, XV. 306.
 SHIKARPOOR, town in India, XX. 116, 305—cultivation near, 304.
 Shildag (Loch), fishery, XIX. 427; IX. 640, 642.
 Shillibear's (The Rev. Mr) sustaining battery, XXI. 616.
 SHILLING, XX. 116; VII. 71, 76; XV. 443.
 SHILOH, XX. 116; XXI. 207.
 Shin, river, XX. 841—smolts from, returning as grilse, IX. 596—salmon of, 598.
 — (loch), XIX. 794; XX. 841.
 Shin-bone, III. 35, 37.
 SHIN-KING, Chinese province, XX. 116.
 Shingle-drift, in geology, XVII. 585.
 SHIP-BUILDING, XX. 116; XVI. 96—its relation to hydrostatics, I. 724—forms of ships best adapted for speed, 888, 889—block-machinery, 879; IV. 783—copper-sheathing (see Sheathing)—capstan,

SHI—SHO

VI. 224—building of masts, 262—caulking, 343—trade in colonial-built ships, 150—iron ship-building, at Glasgow, X. 650—improved by the Crusades, VII. 533—Seppings' improvements in, XVI. 96—artificially prepared timber not suitable for, XXI. 279—in Brazil, V. 299—Maine, XIV. 98—New York, XVI. 220, 226—Holland, XI. 583—Liverpool, XIII. 519—Sunderland, XX. 808—United States, XXI. 426. See Dockyards, Dry Rot, Resistance of Fluids, Navy, Steam-navigation, Timber.
 Ship-canal, XVI. 55—through Nicaragua, 245, 246, 247—one proposed between Suez and Pelusium, XX. 789.
 Ship-money, V. 394.
 Ship-worms, XV. 353—fossil, XVII. 103. See Terebra.
 Shippen (Dr), on surgery, XX. 819.
 Shipping of England, VIII. 737, 742—belonging to different ports of Britain, 738; Scotland, 739; Ireland, *ib.*; colonies of the United Kingdom, 740—British registered vessels employed in the home-trade, 742; in the foreign trade, *ib.*; in the trade of the United Kingdom, British and foreign, 741—of France, X. 262, 266—Ireland, XII. 522—Scotland, XIX. 806—Holland, XI. 585—London, XIII. 662—Liverpool, 518—New York, XVI. 226, 227. See the Geographical articles generally.
 Ships, magnetism of, I. 990—forms of, for speed, 889—Davy's protectors for, 971—Chinese, VI. 583—collision of, at sea, VII. 130—lightning-conductors for, VIII. 609—insurance of, XII. 419—wrecks of, on the British coast, XIII. 446—guard ship, XI. 74—iron ships, XVI. 100—iron and wooden ships compared, XX. 182—French and English compared, 131—designing of, 140—ships of Tarshish, XXI. 26—cheaply built often last longest, 280—tonnage, 303—ventilation of, 542. See Navy.
 Ship-building, Shipping, Anchor, Rigging, &c.
 Shipwreck, means of escape from, XIII. 439, 441—plundering of shipwrecked vessel in Denmark, VII. 740—"wreckers" of the Bahamas, for rescuing vessels from, IV. 367—shipwreck chart of the British Islands, XIII. 446—of British merchant vessels, XX. 28.
 Shipwrights, Company of, XX. 127—education of, at Portsmouth, VIII. 83.
 SHIRAZ, city of Persia, XX. 206—vines of, XVII. 421—climate, 422—manufactures, 424—tobacco, XXI. 294.
 SHIRE, XX. 206—England divided into shires by Alfred, II. 481—officers belonging to, VIII. 720. See County.
 SHIRLEY (James), dramatist, XX. 206; XXI. 171.
 — (Sir Anthony), XVII. 439—Jamaica invaded by, XII. 672.
 Shirt of need, XIII. 113.
 SHIRVAN, in Asiatic Russia, XX. 207; VI. 340, 342—ecclesiastical statistics, XIX. 528.
 SHISHKOFF (A. Semenowitsch), XX. 207.
 SHITOMIR, Russian town, XX. 208; XII. 786.
 Shiva, V. 724.
 SHOA, in Abyssinia, XX. 208; II. 56.
 Shock, electrical, VIII. 601.
 Shoddy trade, XXI. 918, 919.
 Shode ore, in mining, XV. 222.
 SHOE, XX. 208.
 Shoebury-ness, experiments in gunnery at, XI. 128, 145.
 Shoeing of horses, XI. 672; XXI. 560.
 Shoemakers, diseases of, XIV. 442—number in London, XIII. 660; in Scotland, XIX. 804.
 Shoegaer, painter, XVII. 74.
 SHOLAPORE, in India, XX. 208.
 SHOOTING, XX. 209.
 — stars, XIV. 684.
 Shopmen, diseases of, XIV. 442.
 Shops, signs of, III. 323, 324—in London, XIII. 663; in Liverpool, 521.

SHO—SIC

- SHORE (Jane), XX. 227.
 — (Sir J.), his conduct in Oude, XVII. 22 and n. 2.
 SHOREHAM (New), in Sussex, XX. 227—corruption in, V. 472.
 Shoring, in carpentry, V. 749.
 SHORT (James), optician, XX. 227—his reflectors, II. 88; XXI. 127.
 — (Dr Thomas), his works on bills of mortality, XV. 601, 603.
 Short-horned breed of cattle, II. 340.
 Short-sightedness, XVI. 695.
 SHORTHAND writing, XX. 227. See Stenography.
 Shortredes' tables of logarithms, XIII. 555.
 Shot, XX. 213—case-shot, VI. 308; XI. 142. See Gunnery.
 Shouaas, Bornouese tribe, V. 53.
 Shoulder, bones of the, III. 31—joint, 34—muscles, 38—shoulder blade in the mammalia, 81; birds, 86; reptiles, 88.
 SHOVEL (Sir Cloudesly), XX. 227; XV. 797—ship-wrecked on the Scilly islands, V. 449.
 Shoveller, bird, XVI. 817.
 Shrapnel shells, XI. 142—fuse for, III. 702.
 Shrew, in zoology, XIV. 150; XXI. 548.
 SHREWSBURY, XX. 227, 230—battle of, VIII. 687—railways connected with, XX. 229.
 Shrike, bird, XVI. 748.
 Shrimp, VII. 541; IX. 765—Symington, VII. 543—brine-shrimp of Trona lakes, IX. 532.
 SHROPSHIRE, XX. 228.
 SHROUDS of a ship, XX. 231.
 SHROVE-TUESDAY, XX. 231.
 Shrubs, XI. 748; V. 78—for hedges, XVII. 760—evergreen, ib.—deciduous ornamental, 761—nursery culture of, 766.
 Shubneccadie, river, XVI. 343.
 Shuckard (W. E.), his works on insects, IX. 20.
 Shuckburgh (Sir George), on barometrical measurements, IV. 465, 466; I. 730—on the weight of air, XVIII. 24.
 Shuja (Shah), II. 208.
 SHUMLA, in Turkey, XX. 231.
 SHUMSHABAD, town in India, XX. 231.
 Shunting, in railway language, XVIII. 768, 784.
 SHUSHA, town in Asiatic Russia, XX. 231.
 SHUSHTER, town in Persia, XX. 231.
 Shutters of windows, V. 752.
 SHUTTLE, weaver's, XX. 231, 509; XXI. 783, 788, 789—fly-shuttle, VII. 441; XX. 509.
 Shuttleworth (Sir J. Kay), on education, XVII. 477, 479.
 SIAK, in Sumatra, XX. 231.
 Sialis, genus of insects, IX. 179.
 SIAM, XX. 231; III. 735—language of, XIII. 199, 206—Burman invasion of, V. 783—missions established in, XV. 271—coins of, XVI. 391—silk, XX. 277—trade with Singapore, 307—weights and measures, XXI. 813.
 — gulf of, XX. 232.
 Siang, Chinese river, XI. 314.
 Sibbald (Sir Robert), his MSS. in Advocates' Library, Edinburgh, XIII. 401—on the occurrence of *Silurus glanis* in Scotland, XII. 259.
 SIBERIA, XX. 234; XIX. 513, 520, 543; III. 734, 735—climate, 737; XX. 610—languages of, XIII. 199, 217—Hans-teen's magnetic observations in, I. 991; XIV. 60—mines of, XV. 239, 240—annexed to Russia, XIX. 473—criminals sent to, 525—fossil ivory, XII. 664—Keerghèez country of, XIX. 521—population, ib., 522—temperature, XVII. 617.
 Siberian beet, XX. 796.
 Sibylline Books, or Verses, II. 648; XX. 235—magistrates appointed for keeping, VIII. 270.
 SIBYLS, XX. 234—Cumæan sibyl, II. 648; VII. 576—cave of the sibyl, XX. 239.
 SICARD (Abbé), XX. 335—on the educa-

SIC—SIE

- tion of the deaf and dumb, VII. 676, 681.
 SICHARDUS (Joannes), his edition of the Theodosian Code, VI. 743.
 Sicilian diver, wonderful feats of a, VIII. 56.
 — vespers, XII. 649; XX. 258.
 SICILIES, Kingdom of the Two, XX. 235—Joseph Bonaparte, king of, X. 141; Murat, V. 615; XII. 653; XV. 689—statistical details, IX. 397, 398; XII. 634—navy, XX. 38—French trade with, X. 259; British, VIII. 733—sulphur, XVII. 624; XV. 123—universities, XXI. 492. See Naples, Italy, Sicily.
 Sicily, island of, XX. 243—agriculture, 248—roads, 250—provinces, 255—population, 256—pointed architecture of, III. 448—Athenian war with, IV. 205—Carthaginian invasions of, VI. 281 *et seq.*—introduction of silk into, VIII. 276—language, XIII. 213—libraries, 416—coins, XVI. 364; XV. 442, 445—pleistocene deposits of, 217—papyrus of, XVII. 246—sulphur, 624; XV. 123—height of mountains, XVII. 642, 643—Greek colonies in, XIX. 305, 309—Roman wars, 309 *et seq.*—Plato's visits to, XVII. 788, 789, 790—earthquakes, 616—weights and measures, XXI. 813—wines of, 886—map of, XII. Plate. See *Ætna*.
 Sickie, reaping with, II. 313.
 Sickler (Dr), XI. 346.
 SICULIANA, town in Sicily, XX. 264, 245.
 Sicyases, genus of fishes, XII. 307.
 Sicydium, genus of fishes, XII. 306.
 Sicyogaster, genus of fishes, XII. 307.
 SICRON, ancient Greek city, XX. 264—school of sculpture at, XIX. 853, 854.
 SIDONS (Mrs), actress, XX. 264; XXI. 175.
 Sidera, genus of fishes, XII. 231.
 Sideral month, IV. 38—day, 23; XVI. 35—time, 39—astronomy, I. 838.
 Siderite, mineral, XV. 69, 99.
 Sideroscope, Leballiff's, XIV. 89.
 Sidesaddle, plant, V. 93, 182.
 Sidi-Feruch, battle of, X. 197.
 Sidings, in railways, XVIII. 774.
 Sidlaw Hills, XVII. 457; XX. 791; IX. 781.
 SIDNEY, or Sydney (Algernon), XX. 265; XVII. 390, 391—notice of his execution in the London Gazette, XVI. 152.
 — (Sir Henry), in Ireland, XII. 477; XX. 266.
 — (Sir Philip), XX. 266—his censure of old plays, VIII. 145, 147—his patronage of Spenser, XX. 506.
 SIDON, XX. 268, 905; XIX. 573—commerce of, VII. 184—gardens and orchards of, XX. 902—pachalic of, 905.
 Sidra, gulf of, XXI. 353.
 Siebold (Dr), on Japan, XII. 689, 694—on the tea-plant in Japan, XXI. 88.
 — (M. von), on animalcules, III. 209—on serpents, XIX. 66.
 SIEDLEC, in Polish Russia, XX. 270.
 Siege, IX. 823; XXI. 719—artillery used in, III. 691, 692—principles on which conducted, 691.
 SIEGEN, town in Prussia, XX. 270.
 — (LUDWIG VON), inventor of mezzotinto, XX. 270.
 Siemens (C. W.), his regenerative steam-engine, XX. 624.
 — (Messrs), their differential governors, XIV. 410.
 — (Werner), on the electro-static capacities of telegraphic conductors, XXI. 98 and n.—on electric telegraphs, 108.
 SIENA, town in Tuscany, XX. 270—fall of meteorolites near, XIV. 631—Academy of Sciences at, II. 63.
 SIERRA and Serra, XX. 271, 486.
 — LEONE, XX. 271; II. 227; XI. 89.
 — MORENA, in Spain, XX. 487—geology of, 484.
 — Nevada, in Spain, XX. 487—geology of, 484—in California, VI. 96; XVII. 593, 594.
 — of Peru, XVII. 470.

SIE—SIL

- Siete Partidas, Spanish code, XX. 467.
 Sieu-tseuen, instigator of the rebellion in China, VI. 598.
 Sieveright on the pyro-electricity of tourmaline, VIII. 558.
 SIEVSK, in Russia, XX. 272.
 SIERÈS (Emmanuel Joseph), count, XX. 273; X. 50, 57 *et seq.*, 112—his opinion of Napoleon, XV. 792.
 Sigalphus, genus of insects, IX. 188.
 Sigaretus, genus of mollusks, XV. 384.
 Sigebert, X. 4 *et seq.*
 Sigeth, siege of, XXI. 369.
 Sight, sense of, XIV. 565. See Vision, Eyes.
 — (Second), III. 318, n. 1; VII. 154.
 Sigillaria, fossil plant, V. 235.
 SIGISMUND, XX. 273—kings of Poland so named, XVIII. 142, 144—king of Sweden, XX. 847—of Hungary, XII. 12—elector of Brandenburg, XVIII. 648.
 SIGNA, village in Tuscany, XX. 273.
 SIGNALS, naval, XX. 274; XVI. 108, 109; XX. 24, 25—to find the longitude by, XIII. 688.
 — railway, XVIII. 777.
 — of electric telegraph, XXI. 94, 100.
 SIGNATURE, XX. 274; V. 12; IV. 708, n. 3.
 SIGNET, XX. 274.
 — writers to the. See Writers to the Signet.
 SIGNORELLI (Luca), painter, XX. 274—his paintings at Orvieto, XVII. 63.
 Signs, or written characters, remarks on, I. 66, 67—of the zodiac, IV. 12—in arithmetic, III. 583, n.; geometry, X. 508—signs or marks used by booksellers, V. 30—of shops and taverns, III. 323, 324. See Characters.
 SIGONIO (Carolo), historian and antiquary, XX. 274.
 Sihon, river, XII. 711.
 Sikes' hydrometer, XII. 87.
 Sikhs, XI. 464; XVIII. 691—rise of their power, 692—war with the, V. 669, 671; XI. 509.
 SIKKIM, in India, XX. 274—mean temperature of, XI. 442—height of mountains, XVII. 643.
 Sikoko, Japanese island, XII. 688.
 Sila (La), XX. 237.
 Silbermann (Gustave), his works on insects, IX. 18.
 — (M.), on the heat of the combustion of coal, XX. 630.
 Silent system of prison discipline, XVIII. 571.
 SILESIA, in Prussia, XX. 274—agriculture in, XVIII. 665, 666, 667, 668—Silesian wars, III. 637; X. 301; XVIII. 652—Silesian white beet-root, XX. 796.
 — (AUSTRIAN), XX. 275; IV. 310, 309.
 SILHET, in India, XX. 275.
 Silica, chemical character of, VI. 481; XV. 64—in plants, II. 388; V. 96—in sea-water, XVII. 572—earthy silica, XV. 69—aqueous deposits of, 144—silicified plants, XVII. 641.
 Silicic acid, VI. 482.
 Silicon, in chemistry, VI. 481—oxides of, in the earth's crust, XVII. 619.
 Silicula, in botany, V. 137.
 Siliqua, in botany, V. 136.
 Sills, genus of insects, IX. 110.
 SILISTRIA, XX. 275; VII. 654—taken by the Russians, XIX. 496—siege of, in 1854, XV. 313; XIX. 501.
 SILIUS ITALICUS (Caius), poet, XX. 275.
 SILK, XX. 276—of Bengal, IV. 649—China, VI. 588, 597—Cochin-China, VII. 48—Granada, X. 794—Greece, XI. 16, 32—Hindustan, 453—Italy, XII. 640—Japan, 693—Lombardy, XIII. 653—the Two Sicilies, XX. 249—Tuscany, XXI. 394—imports of, from India, XI. 462—of the spider, III. 374, 375—ancient Asiatic trade in, 754—origin of, VIII. 276—imports of, into the United Kingdom, 737—reduction of the duty on foreign, XIV. 288—silk stockings, XX. 706—perellian silk, XXI. 783.

SIL—SIM

- Silk-cotton tree, IV. 840—order of plants, V. 184.
 SILK-MANUFACTURE, XX. 279—bleaching of, IV. 769—dyes better than cotton or linen, VIII. 274—scouring of, 276—dyeing of, ib.—aluming, 277—method of dyeing it red, 291; yellow, 298; orange, 299, 313; blue, 303; black, 305; green, 310; violet or purple, 312, 314—mixtures of black, &c., 314—calendering, VI. 92—of Asia, III. 757—Derbyshire, VII. 755—England, VIII. 730; XIV. 288; XXI. 792—France, X. 254; XXI. 793—Belgium, IV. 625—Italy, XII. 640—Ireland, 521—Germany, X. 590—London, XIII. 663—Lyons, 751—Manchester, XIV. 254—Persia, XVII. 424, 425—Scotland, XIX. 805—Spain, 490—Switzerland, XX. 890.
 SILK-WORM, XX. 286; IX. 205, 213—trade in, in Lombardy, XIII. 653—species in Jamaica, XII. 681.
 Sill of windows, III. 512; V. 739.
 Sillago, genus of fishes, XII. 273.
 Sillery, wine, XXI. 883.
 Sillimanite, mineral, XV. 86.
 Silloch, fish, XII. 269.
 Siloam, pool of, XII. 736, 745.
 Silpha, genus of insects, IX. 114.
 Silphales, family of insects, IX. 113.
 Silundia, genus of fishes, XII. 262.
 Silures, V. 377; XI. 350.
 Silurian period, in geology, XV. 197; XVII. 587—fishes of, XII. 351; XVII. 640—fossils of invertebrata in, 96, 97 *et seq.*—formation, in Russia, XIX. 517—in New York, XVI. 215—Scotland, XIX. 790, 793.
 Siluridae, or Siluroids, fishes, XII. 261, 258.
 Silurus, genus of fishes, XII. 261, 259—electric, I. 738; VIII. 577.
 Silvanite, mineral, XV. 120.
 Silvas of South America, XVII. 604, 609.
 SILVER, XX. 296; VI. 498; XV. 66, 113, 234—assaying of, III. 770—standard sterling silver of Great Britain, VII. 72—supply of, in early ages, 188—influx of, from America, 189—decrease in the supply of, for some time subsequent to 1810, 191—its value in the early part of last century, 378—process of coining, 86—melting, 87—variations of the standard, 72—relative proportions of silver to gold, 78—amount coined at the Royal Mint, 95—specific gravity of, XII. 88—ductility of, X. 702—beating of, 703—extracted from lead, XVII. 622; process of, ib.; XV. 234—held in solution in sea-water, XVII. 572—distribution of, 622—in galena, XIII. 299—use of, as money, XV. 417—coins of, 421 *et seq.*, 443; XVI. 352 *et seq.*—debasement of, XIV. 428—some of its salts poisonous, 434—red, XV. 121—bismuthic, ib.—plating with, XVII. 783—why less valuable than gold, XVIII. 241—cohesion of, XX. 756. See Precious Metals.
 — fir, XVII. 757.
 Silver-mines, XV. 234—in America, II. 705—Burmah, V. 779—Bolivia, 825—Chili, VI. 548, 550—Hungary, IV. 313; XII. 17—Japan, 689—Mexico, XIV. 715—Europe, IX. 387—Norway, XVI. 322—of Pasco, XVII. 471—Peru, ib.—Puno, XVIII. 695—Russia, XIX. 542, 543—Siberia, 550—Spain, 489; II. 600—what benefit accrues to a country from colonies possessing them? VII. 145—silver found in England, 77, 407, 763; XV. 234—in Scotland, XIX. 804; VIII. 238; XIII. 175—Ireland, XII. 607.
 Silverphylinglanz, XV. 117.
 Silver's marine governor, XX. 653, 654.
 Silversmith, X. 705.
 Silvius, genus of insects, IX. 231.
 Simarubaceæ, nat. order of plants, V. 189.
 SIMBIRSK, in Russia, XX. 296; XIX. 521.
 SIMEON (Charles), divine, XX. 296.
 — of Durham, XX. 296.
 — (Moses Ben), his Hebrew Bible, IV. 697.
 — Stylites, XV. 407.

SIM—SIN

- SIMFEROPOL, town in Russia, XX. 296; II. 435; VII. 504.
 Simiadae, in zoology, XIV. 137.
 Simiae catarrhini, XIV. 137—platyrrhini, 141. See Monkeys.
 SIMILE, XX. 297; VII. 219; XIX. 132.
 SIMLA, in India, XX. 297.
 Simmel (Lambert), XII. 474; VIII. 695.
 SIMON MACCABEUS, XX. 297; XII. 733, 770.
 — (RICHARD), XX. 297—his French New Testament, IV. 701—his Critical History of the Old Testament, XIX. 828.
 — (Dr), on the thymus gland, XII. 316.
 Simon's Essay on Irish Coins, XV. 435.
 SIMONIDES, XX. 297—invention of mnemonics by, XV. 285—instruction at Thermopylae by, XX. 500.
 Simons (Richard), VIII. 695.
 Simoon wind, XIV. 685—of Arabia, III. 342—of Egypt, VIII. 422.
 Simosaurus, fossil reptiles, XVII. 144.
 Simpliciani, section of insects, IX. 90, 92, 93.
 Simplicipedes, section of insects, IX. 96, 99.
 Simplicity, in poetry, XVIII. 95.
 SIMPLICIUS, XX. 298.
 SIMPLON, XX. 298; II. 624—Bonaparte's road over the, ib., n.; XIX. 228.
 Simpson (General), XIX. 509, 510—on the designs of the Russians in the battle of Tchernaya, 509.
 — (Prof.), his experiments on the growth of plants, II. 316—chloroform as an anæsthetic first proposed by, VI. 631.
 — (THOMAS), XX. 298—questions in physical astronomy solved by, I. 694—on annuities, III. 221; XII. 397—on mortality, XV. 632—on probability, XVIII. 591—his rules for finding the areas of plane surfaces, XX. 140 *et seq.*
 — (Thomas), his Arctic expedition, XVIII. 171, 172.
 Simon (Archibald), VI. 72.
 — (Dr ROBERT), XX. 298; I. 698, and n. 1—problems of Apollonius restored by, III. 302—on Euclid's porisms, XVIII. 361.
 Simulia, genus of insects, IX. 229.
 Sin, original, XVIII. 477—nature of sin, XXI. 199—all men under, 198—principle of, 200—kinds of, 192—no mere man has the power to forgive, I. 498—imputation of Adam's sin to his posterity, XXI. 204, 205, 207.
 — wilderness of, XX. 302.
 SINAI (Mount), XX. 302—incriptions near, XVII. 535—library of the convent of, XIII. 428—height, XVII. 644—dates of, VIII. 431—the law given from, XV. 659.
 Sinaloa, in Mexico, XIV. 727, 718.
 Sinclair (George), on the barometer, IV. 462—works of, ib., n.—on the pressure of the atmosphere, XVIII. 27.
 — (Sir JOHN), XX. 303—on training, VIII. 25—his connection with the Board of Agriculture, II. 265.
 SINDH, Indian province, XX. 303—Sepoy revolt in, XVI. 312—annexation of, V. 4.
 Sinendrij, Persian town, XX. 307.
 Sines, arithmetic of, II. 547—nature and calculation of, XIII. 565.
 Sinew, II. 823. See Tendon.
 Sinfulness of man, sources of, XXI. 201; consequences of, 207.
 Sing-Sing, penitentiary of, XVIII. 571.
 SINGAPORE, XX. 306—trade of, III. 757—silver exported from England to, XVIII. 472—weights and measures, XXI. 813.
 Singer (Mr), on the electricity of powders, VIII. 564—on the fusion of wires, and oxidation of metals, by electricity, 592, 593—on the revival of oxides, ib.—on the effects of electricity on gases, 597—his electrometer, 617—his electric pile, XXI. 619.
 Singhalese, VI. 391, 398—language, 397. See Ceylon.

SIN—SIT

- SINGING, XX. 307; XV. 703; embellishments in, 719—singing-birds, XVII. 633.
 Single-entry, book-keeping by, V. 28.
 Singlestick, game, XI. 170.
 SINIGAGLIA, town in the Papal States, XX. 307; XVII. 241—fair of, IX. 469.
 SINISTER, in heraldry, XX. 307; XI. 327.
 Sinkar, lake in Sumatra, XX. 802, 803.
 Sinkel, river in Sumatra, XX. 803.
 Sinking fund, VIII. 752; X. 328—Pitt's plan of a, V. 439; XVII. 736—Walpole's bill, XXI. 692.
 SINNA, town in Persia, XX. 307.
 SINOPE, XX. 307—port of, IV. 744—destruction of the Turkish fleet at, XIX. 501; XXI. 375.
 Sinopite, mineral, XV. 84.
 Sinter, siliceous, XV. 69, 144—pearl, ib.
 Sintoos, Japanese sect, XII. 694.
 SINUESSA, ancient Italian town, XX. 308.
 Sinumbra lamp, XIII. 171.
 Sinus, in anatomy, III. 30—variable size of the frontal, XVII. 567 and n.—much developed in some of the mammalia, III. 74, 79—in what fistula differs from, IX. 650—in veterinary science, XXI. 558.
 Sion, Swiss town, XX. 882.
 — College, VII. 115.
 Sionitas' translation of Edrisi's Geography, VIII. 411.
 SIOUT, XX. 308; VIII. 505.
 Sioux, American tribes, IX. 347—languages, XIII. 223.
 SIPHANTO, island, XX. 308.
 Siphon, XII. 82. See Syphon.
 Siphona, genus of insects, IX. 245.
 Siphonostomata, mollusks, XV. 384.
 Siphonostomus, genus of fishes, XII. 315.
 Siphonotreta, fossil mollusks, XVII. 105.
 Siphonotus, genus of mollusks, XV. 372.
 SIPPONTUM, ancient Italian town, XX. 308.
 Sipunculidae, zoophytes, XXI. 984.
 Sipunculus, zoophytes, XXI. 985.
 Sir, title, XX. 308—applied to clergymen, XIII. 114.
 Sirand (A.), his work on bees, IX. 23.
 SIREENNUGGUR, town in India, XX. 308.
 Siren, reptile, XIX. 14, 84; XIII. 460—odontology of, XVI. 430.
 Sirène, instrument for enumerating sounds, I. 892.
 Sirenidae or Sirenoidea, family of fishes, XII. 318.
 SIRENS, in fable, XX. 308.
 Sirex, genus of insects, IX. 184.
 SIRHIND, in India, XX. 309.
 SIRINAGUR, XX. 309. See Cashmere.
 SIRIS, city of Magna Græcia, XX. 309.
 Sirius. See Dogstar.
 Sirmarks, in ship-building, XX. 184.
 SIRMOUR, in India, XX. 309.
 Siro, genus of arachnides, III. 387.
 SIROCCO, XX. 309, 247; XIV. 470; XI. 14; XII. 444—electrical state of the air during, VIII. 579.
 SIRONJ, town in India, XX. 309.
 Sirven, aided by Voltaire, XXI. 661.
 SISEBOLI, in Turkey, XX. 309.
 Siskin, bird, XVI. 761.
 SISMONDI (J. C. Leonard Simonde de), XX. 309—on Machiavelli, I. 234—on taxation, XXI. 57.
 Sisor, genus of fishes, XII. 263.
 Sisson (Rev. J. Lawson), his photographic process, XVII. 548.
 Sisson's optical instruments, III. 808.
 Sissoo wood, XI. 444.
 SISTERON, in France, XX. 310.
 Sistine Chapel, XIV. 738—Angelo's painting of, XVII. 64, 66.
 SISTOVA, in Turkey, XX. 310; VII. 653.
 SISTRUM, musical instrument, XX. 310.
 SISYPHUS, in fable, XX. 310.
 Sitana, genus of reptiles, XIX. 33.
 Sitang, river, XXI. 151.
 Sitaris, genus of insects, IX. 136.
 Sitfasts, in horses, XXI. 579.
 Sitka, meteorological observations at, XIV. 687.
 Sitkokf, Japanese island, XII. 688.
 Sits, in coal-workings, VII. 122.
 Sitta, genus of birds, XVI. 768.
 SITTINGBOURNE, town in Kent, XX. 310.

SIU—SKU

- SIU-AN-HOA, Chinese town, XX. 311.
 Siva, Hindu deity, V. 287; XI. 468.
 SIVAS, in Turkey, XX. 311.
 SIVASH, XX. 311.
 Sivatherium, fossil mammals, XVII. 173, 598.
 SIWAH, XX. 311; II. 718.
 Six (Mr), on dew, VII. 769—his register thermometer, XI. 724; XXI. 224.
 SIXTUS V. (Pope), XX. 311.
 — IV. (Pope), his improvements in Rome, XIX. 366, 367.
 SIZAR, XX. 312—at Oxford, XXI. 456.
 Sizarships, XXI. 488.
 Size of organs, in phrenology, XVII. 564.
 Sizing of paper, XVII. 256, 258, 259—gold size, X. 703—in weaving, XXI. 784.
 Skager-rack, IV. 402, 403, 404.
 Skaife (Thomas), his pistolograph, XX. 691; XVII. 554.
 SKALITZ, town in Hungary, XX. 312.
 Skaptaa Yokull, eruption of, in 1783, XII. 198—quantity of lava ejected by, XVII. 589.
 Skates, fish, XII. 325, 326; IX. 763.
 SKELETON, XX. 312; III. 4—of the lower animals, 74—fishes, XII. 208, 210 and n., 211 and n.—of insects, IX. 30—cleaned by exposure to ants, III. 263.
 Skellig islands, XIII. 73.
 Skelly, fish, XII. 256.
 SKELTON (John), poet, XX. 312.
 SKENE (Sir John), lawyer, XX. 313.
 — (Loch), VIII. 238.
 SKERRIES, Irish seaport, XX. 314; VIII. 215—lands, ib.
 — in Shetland, XX. 113.
 Skerryvore lighthouse, XIII. 467—force of waves at, XI. 216.
 SKEW BRIDGE, XX. 314, 729; on railways, XVIII. 762.
 Skey, on muscular filament, II. 821.
 SKIBBEREEN, town in Ireland, XX. 315.
 Skiddaw, VII. 576, 578; XVII. 643—slates of, XV. 196.
 Skin, structure of the, II. 834—painted by the North American Indians, 682—cellular tissue under the, 786—its connection with the mucous membranes, 838—differences of its complexion, VII. 222—alleged cause of its black colour in the negro, II. 835—seat of its colour, VII. 223; XVII. 667—excretion from, ib.—of the crustacea, VII. 537—of the cetacea, XIV. 238—as a manure, II. 407—diseases of the, in the domestic animals, XXI. 578.
 SKINNER (John), XX. 315.
 Skins, imports of, into the United Kingdom, VIII. 735. See Leather, Hides.
 Skipetar, or Albanians, IX. 351.
 Skipper, fish, XII. 264.
 SKIPTON, town in Yorkshire, XX. 316—fairs at, XXI. 958—castle, 959.
 Skirret, V. 195—culture of, XI. 740.
 Skirtings, in joinery, V. 750, 751; XII. 809, 812.
 Skleroklase, mineral, XV. 119.
 Skolopsite, mineral, XV. 75.
 Skrimshire (Mr), on the phosphorescent effects of electricity, VIII. 598.
 Skua, bird, XVI. 813.
 Skull (human), III. 15—general description of, 29—of the indigenous Americans, II. 676—distinguished by its spheroidal shape and great size, 775; III. 28—shape and dimensions at different ages, 29—forms in different nations, ib.—Daubenton's occipital angle, 79—Camper's facial angle, ib.—Cuvier's method of estimating the proportion of the face and, 80—of the aborigines of Australia, IV. 259—Oken's vertebral theory of, XVI. 499, 501—how far correspondent in shape with the brain, X. 383; XVII. 673, 674—organs of the faculties marked out on, 562—amount of fluids contained in, 698—artificial flattening of, IX. 348—surgical treatment of fractures of, XX. 826.
 — of mammalia, III. 77; XIV. 133—birds, 84—reptiles, 87—fishes, 90; XII.

SHU—SLE

- 210—not filled by the brain in some animals, III. 104.
 Skunk, quadruped, XIV. 158—its fur, X. 348.
 Sky, colour of, XVI. 691—instrument for measuring the intensity of its colour, VII. 606; XVI. 692; XIX. 653—cold from a clear sky, VII. 101. See Climate.
 Sky-rocket, XVIII. 707.
 SKYE, island, XX. 316; XI. 278, 279—Michaelmas custom in, XIV. 736.
 Skyros. See Seyros.
 Slabber, discovery of the metamorphosis of crustacea by, VII. 544.
 Slacks, in Londonderry, XIII. 680.
 Slag, in mortar, XX. 714.
 SLAITHWAITE, in Yorkshire, XX. 317.
 Slaking of lime, XX. 713.
 SLANDER, XX. 317.
 Slane, in Meath, pagan relics near, XIV. 377.
 Slaney, river, XII. 505.
 Slate, XV. 142, 153, 155—slaty cleavage, 154, 179; XVII. 620—lead found in clay-slate, XV. 243—specific gravity of, XII. 88—slate-clay, XV. 83—polishing, 69—adhesive, ib.—roofing slates, XIX. 374—different kinds of, V. 746.
 Slate-pencils, XVII. 376.
 Slate-quarries in Britain, V. 746—Caernarvonshire, VI. 54—at Birnam, Perthshire, XVII. 456—of Penrhyn, 620—Hebrides, XI. 278—Merionethshire, XIV. 543—Dumfriesshire, VIII. 235.
 Slateford, aqueduct at, III. 339.
 Slaters' work, V. 745—measurement of, 746—on a farm-stead, II. 373.
 SLAVE LAKE, (Great), XX. 318; XVIII. 172.
 Slave-coast, II. 227; XI. 88, 89.
 Slave-trade, XX. 321—African, II. 219, 227—South American, 693—discoveries in Africa extended by, 210—opposition to, in Britain, V. 533, 538, 540; by the Quakers, 527; XVIII. 722—its abolition there, V. 600—compensatory grant to Spain, 623—convention on, X. 194—Liverpool's participation in, XIII. 518—Bryan Edwards on, VIII. 414—opposed by Roscoe, XIX. 417; and Wilberforce, XXI. 865—in Nubia, XVI. 348—Constantinople, VII. 302—first publicly condemned by Dominic Soto, I. 330. See Negroes.
 SLAVERY, XX. 318, 324—in Afghanistan, II. 206—Brazil, V. 295—Colombia, VII. 134—Hayti, XI. 255—India, 472 and n. 1—Jamaica, XII. 674—Java, 708—Russia, XIX. 523—United States, XXI. 430, 439—Virginia, 599—early abolished by the Danes, VII. 746—abolished in Bolivia, in 1836, IV. 837—American States in which it does not exist, II. 707—recent discussion on, in America, XIII. 42—Aristotle's view of, III. 569—Lord Exmouth's expedition to Algiers for the suppression of, V. 621—resolutions of the House of Commons in 1823 for improving the treatment of slaves, 639—proceedings in 1824, 641—sanctioned by Islamism, XV. 304—act for the abolition of, in all the British colonies, V. 664—its influence on the Athenians, XX. 371—Wilberforce's exertions for the abolition of, XXI. 865—Washington's views of, 754; his emancipation of his own slaves, 764.
 SLAVONIA, kingdom of, XX. 327; XII. 9.
 Slavonians, IV. 318, 320; X. 587; XII. 10, 11; XIX. 469, 522—their historical writers, XI. 547.
 Slavonic language. See Slavonic.
 SLEAFORD (New), in Lincolnshire, XX. 328.
 Sledge, in Lapland, XIII. 240—sledge-racing in Russia, XIX. 545. See Sleigh.
 Sleeman on Oude, XVII. 15, 16, 18.
 Sleep, XVII. 680—mental phenomena of, XIV. 583—time that should be given to, XIX. 612—less aliment needed during, III. 180—supposed sleep of plants, V. 108. See Dreams.

SLE—SME

Sleep-walking. See Somnambulism.
 Sleepers, in railways, XVIII. 754, 756-58.
 SLEIDAN (Johann), historian, XX. 328.
 Sleigh and Sleighting, in Canada, VI. 139, 140.
 SLESWICK, XX. 328. See Schleswig.
 Sleuthoude. See Bloodhound.
 Slidderford, pillars at, VIII. 123.
 Slide-rest, for turning lathes, I. 879.
 Slide-valves of steam-engines, XX. 589, 596, 654.
 SLIDING-RULE, XX. 328.
 Slieve Bloom Mountains, XIII. 91; XVIII. 729, 729.
 — Donard, mountain, VIII. 122.
 Slievenamanagh Mountains, XXI. 285.
 Slight (James), his Report on Bell's Reaping Machine, II. 276.
 SLIGO, Irish county, XX. 328—agricultural statistics of, XII. 516, 517.
 — bay, XX. 332.
 Sling, its employment in war, III. 425, 426.
 Slingeby (Sir Robert), his work on the navy, XX. 130.
 SLINGELANDT (Peter Van), painter, XX. 332.
 Slips for hauling up ships, VIII. 77.
 SLOANE (Sir Hans), XX. 332; XIV. 462; IX. 4—purchase of his library for the British Museum, XIII. 389—Sloane MSS., 391—on birds, XVI. 726—Petiver's collection of plants purchased by, XVII. 495—on the Physales, XXI. 999.
 SLOBODSKOI, or Slobosk, in Russia, XX. 334.
 Sloe, XVII. 760.
 SLONIM, town in Russia, XX. 334.
 Sloth, quadruped, XIV. 190; XVII. 631—odontology of, XVI. 441—bones of the foot, III. 82, 83—stomachs, 108—intestines, 110—tooth of the three-toed, XVI. 411, 412; of the two-toed, 441—fossil sloths, XVII. 173, 637.
 SLOUGH, XX. 334.
 Slovaks, XII. 11. See Slavonians.
 Slow-worms, XIX. 41.
 Slubbers, wages of, in Leeds district, XXI. 919.
 Slubbing billy, XX. 510.
 Slugs, XV. 374.
 SLUICE, XX. 334—diminution of discharge through a, XIX. 189—in irrigation, XII. 613.
 SLUTSK, town in Russia, XX. 334.
 Smalcald, league of, XIX. 824; articles of, 825.
 Small (Dr), of Birmingham, his services to Watt, I. 868, n. 1.
 Small's plough, II. 270.
 Smallpox, death from, XV. 604—Sydenham's treatment of, XX. 895; XXI. 500.
 Smaltine, mineral, XV. 115.
 Smaridia, genus of arachnides, III. 388.
 Smaris, genus of fishes, XII. 288.
 SMART (Christopher), XX. 334.
 — (John), his tables of interest, &c., XII. 433.
 Smearing of sheep, II. 351.
 Smeathman (Henry), his work on white ants, IX. 11, 179, 180.
 SMEATON (John), XX. 335—his boring mill, V. 41—his improvements on the diving bell, VIII. 64—on hydrodynamics, XII. 113, 121, 140—on water-wheels, 164, 168—on waves, XI. 216—his air-pump, XVIII. 37, 38—on the velocity of wind, 65—pyrometer invented by, 702—Eddystone Lighthouse erected by, III. 491; XIII. 464—his improvements on the steam-engine, XX. 575—his great Chase-water engine, ib.—his steam-boiler, 588.
 Smeck (Magnus), king of Sweden, XX. 845.
 Smectymnus, VI. 65; XV. 25.
 Smee (Alfred), his chemico-mechanical battery, XXI. 618—on multiplication of works of art in metal by voltaic electricity, 635, 636—on voltaic etching, 636, 637—on printing bank-notes from electrotypes, VIII. 810, n. 2.
 Smell, sense of, in man, XVII. 677; XIV. 563—acute in the Arabs, III. 348—in the lower animals, 178; ants, 262; bees,

SME—SMI

IV. 575; insects, IX. 78; fishes, XII. 220—organ of, in man, III. 42; in brutes, 94 (see Nose)—smell of minerals, XV. 60.
 SMELLIE (William), XX. 336—his notice of Adam Smith, 343 and n. 3, 345—his connection with Gilbert Stuart, XXI. 783.
 Smelt, fish, IX. 763.
 SMELTING, XX. 337—of iron, VI. 178, 179, 489; XII. 538 *et seq.*—by hot-blast, 544; XIV. 546—fuel for, XII. 542—of tin, XV. 241—at Newcastle, XVI. 167. See Copper-smelting.
 Smerdis, genus of fossil fishes, XII. 343; XVII. 127.
 Smerinthus, genus of insects, IX. 210.
 Smethwick's burning-glasses, VI. 10.
 SMETINJORSK, in Siberia, XX. 337.
 Smilacæ, nat. order of plants, V. 210.
 Smiles (Dr), his Life of George Stephenson, XX. 682.
 Smilis, Greek sculptor, XIX. 852.
 Smith, the most common surname in England, XVIII. 836.
 — (ADAM), XX. 337—his theoretical system of philosophy, I. 3—on the ancient Greek philosophy, 9—on the law of nations, 91—on French metaphysical writers, 172 and n. 3—his dissertation on language, 175, 176, n. 1—his Theory of Moral Sentiments, 374—his theory of sympathy, 375, 376, 377—his objections to apprenticeship, III. 326—his friendship with Dr Black, IV. 738—on metal as a medium of exchange, VII. 68—on the high price of gold before the recoinage, 79—on monopoly of the colonial trade, 141, 143, 144—on labour, 162—on the value of gold and silver in the early part of last century, 378—on division of labour, 429—Lord Hailes' Latin version of his account of Hume's last illness, 636—on exchange, IX. 431—on interest, XII. 429—on the origin of language, XIII. 188, n.—on money, XV. 416, 437—on the Bank of England, 470—his theory of rectitude, 545—on joint-stock companies, XVII. 316, 317—on wealth, XVIII. 211—his Wealth of Nations, 222; effects of its publication, I. 374; its prohibition in Spain, IV. 713—on capital, XVIII. 232, 233—on desire to better our condition, 234—on the productiveness of agriculture, 236—on retail dealers, 237—on value, 239—on wages, 240—on productive and unproductive consumption, 257—on primogeniture, 516—his opinion of Quesnay, 733—on taxation, XXI. 38, 43 *et seq.*; his maxims on, 40; on the tax on wages, 49.
 — (Dr Archibald), on Peru, XVII. 470, 471, 472.
 — (Assheton), his hounds, XI. 767.
 — (Captain Baird), on Italian irrigation, XII. 140.
 — and Beck (Messrs), their object-glasses, XIV. 779, 780—their telescope, XX. 687, 688.
 — and Coventry, their steam-boiler, XX. 616.
 — (Charles), on the corn produced and consumed in the United Kingdom, VII. 395—on the corn-trade, 379.
 — (Charlotte), XX. 837—her novels, XIX. 279.
 — (Dr), his microscope, XIV. 786.
 — (EDMUND), XX. 346.
 — (F.), his works on insects, IX. 19.
 — (F. P.), his experimental screw-vessel, XX. 137, 639—his screw-propeller, 658.
 — (Dr Gordon), on forensic medicine, XIV. 424.
 — (General Sir Harry), his victory over the Sikhs, II. 583—his proceedings against the Kafirs, XIII. 34, 35; X. 712.
 — (James), of Deanston, his system of draining, II. 264; VIII. 133—his subsoil plough, II. 271—machinery erected by, at Shaw's Water, XI. 46.
 — (JAMES and HORACE), XX. 346.

SMI—SNI

SMITH (Sir James Edward), XX. 346—his herbarium, XVI. 334.
 — (John), of Cambridge, on the immortality of the soul, I. 58, n. 1—passages from, illustrative of the Cartesian philosophy of the mind, 61, n. 2.
 — (JOHN PYE), divine, XX. 347—on the Deluge, VII. 723—on the dispersion of mankind, VIII. 45.
 — (JOHN THOMAS), XX. 348.
 — (JOSEPH), Mormonist, XX. 348; XV. 589.
 — (Sir Lionel), governor of Jamaica, XII. 674.
 — (Nicholas Hankey), on breeding horses, XI. 636.
 — (Rev. Mr), of Lois Weedon, his system of growing wheat, II. 293; partly a revival of Tull's method, 308.
 — (Rev. Mr), missionary, case of, XX. 324.
 — (Sir Sidney), his defence of Acre, V. 568; X. 112; VIII. 489.
 — (SYDNEY), XX. 348—on Francis Horner, XI. 632—on the origin of the Edinburgh Review, XII. 716.
 — (Dr Southwood), his efforts in favour of sanitary legislation, XIX. 603.
 — (Dr Thomas), on feudalism in Turkey, IX. 521.
 — (Sir THOMAS), XX. 350.
 — (WILLIAM), geologist, XX. 351.
 — (Dr William), his Lexicon, XVII. 526.
 — (Rev. William), on British diatomaceæ, III. 212.
 Smith's bellows, IV. 795—anchor-smiths, III. 119.
 — work, in building, V. 756.
 Smithsonite, mineral, XV. 100.
 Smithy coal, VII. 118.
 Smits (Edward), on the population of the Netherlands, XV. 620, 634.
 SMOKE, XX. 352—injury to the health of towns from, XIX. 605—Smoke Nuisance Abatement Act, ib.
 Smoke-balloons, II. 171, 172.
 SMOKE-SAIL, XX. 359.
 Smoking, fashion of, IX. 487.
 — mountain, XVIII. 338.
 SMOLENSE, in Russia, XX. 359, 360; XIX. 521—Napoleon's capture of the city, X. 155—his retreat from, 158.
 SMOLLETT (Tobias), XX. 360—character of his novels, XIX. 273—on the feudal system in the Highlands, IX. 521, n. 1.
 Smolts, III. 152; IX. 591; XII. 239—their conversion into grilse, IX. 596.
 SMUGGLERS, XX. 363; XXI. 70.
 Smuggling, encouraged by indirect taxes, XXI. 58; and high duties, 69—reduction of these the only means of preventing, 70—in Spain, XX. 491.
 Smut, disease of wheat, V. 171, 172.
 Smynthurus, genus of insects, IX. 261.
 SMYRNA, XX. 363—probable birth-place of Homer, XI. 595—raisins of, XVIII. 799—trade of, XXI. 385.
 Smyth (C. P.), astronomer royal of Scotland, III. 818, 819—his meteorological observations on Teneriffe, XIV. 657, 676, 680, 685—on zones of vegetation on the Peak of Teneriffe, XVII. 625.
 — (Admiral), on the Mediterranean, XVII. 573, 574—Neapolitan coasts, XX. 241, 242, 244—atmospheric phenomenon described by, 246.
 Snails, XV. 373, 374, 368.
 Snake. See Serpents.
 Snake-root, V. 183—Virginian, 205.
 Snap-fishing, III. 159.
 Sneedorf (Jens S.), XIX. 693.
 SNEEK, town in Friesland, XX. 364.
 SNELL (Willebrord), XX. 364; X. 504—his measurement of an arc of the meridian, I. 618; IX. 548; III. 801—his discovery of the true law of refraction, I. 627, 747; II. 87; XIII. 449; XVI. 530—his treatise on navigation, 5—on the quadrature of the circle, XX. 523.
 Snelling, on coinage, VII. 75.
 Sniadecki (Andrzej), XX. 364.
 — (JAN), XX. 364.

SNI—SOC

Snipe-fish, XII. 209.
 Snipe-shooting, XX. 223.
 Snipes, XVI. 803.
 SNORRO STURLESON, XX. 364; XIX. 689—Edda of, 690; VIII. 388; Rask's edition of, XVIII. 808.
 SNOW, XX. 365; XIV. 659—exportation of, from Aetna, II. 190; VII. 101—cooling with, ib.—depth of, in Canada, VI. 140—its influence on rocks, XV. 139—perpetual snow, XVII. 602—line, or level, of perpetual snow, XIV. 659; X. 633; among the Alps, II. 625; of the Tyrol, X. 585; on the Andes, II. 669; XVII. 602; in Mexico, XIV. 716; Himalayas, XI. 442; VI. 772; Pyrenees, XVIII. 700; XX. 486—red, XI. 43—red snow plant, V. 75—green-snow plant, 143. See Glacier, Polar Regions.
 Snow-drop and snow-flake, plants, V. 212.
 Snow-drop tree, XVII. 764.
 Snow-flower, Virginian, XVII. 764.
 Snow-skates, XIII. 240.
 Snow-spectacles, XIV. 800.
 SNOWDON, Welsh mountain, XX. 365; VI. 54—barometrical measurement of, IV. 466—height, XVII. 643.
 Snuff, XXI. 295—manufacture of, 296, 297—at Sheffield, XX. 96.
 Snuff-boxes, manufacture of, at Cumnock, VII. 584; Mauchline, XIV. 359.
 Snuff-makers, diseases of, XIV. 443—license paid by, XIII. 435.
 Sny, in ship-building, XX. 185.
 SNYDERS, or SNEYDERS (Francis), XX. 365; XVII. 75.
 Soaking of timber, XXI. 279.
 SOAP, XX. 365—knowledge of, in ancient times, VIII. 273—license paid by makers of, XIII. 435—rosin used in making, XIX. 88—manufacture of, in France, X. 255.
 Soap-bubbles, colours of, XVI. 602—solid bubbles, 603.
 Soapstone, XV. 84.
 Soapwort, order of plants, V. 186.
 Soar, river, XIII. 320.
 SOBIESKI (John), XX. 367; XVIII. 144—the Turks defeated by, XXI. 370—his residence, 733.
 Soboles, in botany, V. 79.
 Sobraon, battle of, V. 670; XVIII. 693.
 Sobriety, a virtue of the Chinese, VI. 595.
 SOCAGE, XX. 367.
 Social science, XX. 552.
 — war, XIX. 320.
 Socialism, denounced by Tocqueville, XXI. 300. See Communism.
 Society, origin of, XII. 255—science of, 263—duties connected with, XV. 569—changes in English, VIII. 761. See Caste, Rank.
 — for promoting science, &c., XX. 367—advantages arising from learned societies, I. 47—societies in London, XIII. 674; XX. 368; Edinburgh, ib.; Dublin, ib.—Asiatic, III. 759; VI. 70—friendly societies, X. 309—anti-slavery societies, XX. 321; in United States, II. 43—Pythagorean, XVIII. 712. See Academy, Bible Societies, Royal Societies, &c.
 — ISLANDS, XX. 368; XVIII. 279—bread-fruit of, V. 300.
 Socinians, XX. 369; XII. 764—views of some of them on original sin, XXI. 204; respecting the person of Christ, 208. See Socinus.
 SOCINUS (Faustus), XX. 368.
 — (LÆLIUS), XX. 368.
 Sockna, town in Fezzan, IX. 527.
 SOCONUSCO, town in Mexico, XX. 369.
 SOCORRO, town in New Granada, XX. 369.
 SOCOTRA, island, XX. 369; II. 229.
 SOCRATES, XX. 369; XVII. 783 *et seq.*—his mode of teaching, 785, 786—his method of reasoning, I. 17, n.—his answer to those who maintained that the superiority of the soul of man to that of a brute arises from superior organisation, 180—a teacher of virtue rather than a searcher after truth, 316—Plato's account of his doctrines, ib.—his descrip-

SOC—SOL

tion of a tyrant, 317—on the opinion of men as to a future state, 460—Eberhard's defence of, VIII. 369—Aristophanes' ridicule of, 139—poison which caused his death, XI. 311—his ideas on beauty, IV. 537—his daemon, III. 310—cause of his condemnation, IV. 216—Xenophon a disciple of, XXI. 950.
 SOCRATES, of Constantinople, XX. 404.
 SODA, XX. 404; VI. 485; XV. 65, 61—in plants, II. 387—poisonous quality of, XIV. 434—manufacture of, at Newcastle, XVI. 167—nitrate of, as manure, II. 305, 413—salts of, as manure, 413—silicates, ib.
 Soda-alum, II. 636, 638; XV. 97.
 Sodalite, mineral, XV. 74.
 Sodium, VI. 485; XV. 60, 61—Davy's discovery of, VII. 669—specific gravity of, XII. 88.
 SODOM, XX. 404; XVII. 187, 192.
 SODOR, XX. 404—bishopric of, XIV. 246.
 Soemmering (S. Thomas), his anatomical works, II. 769; III. 73—spot on the eye named after him, 44—on the form of the eye, 95.
 SOERABAYA, in Java, XX. 404.
 SOERKARTA, in Java, XX. 404.
 SOEST, town in Prussia, XX. 404.
 SOFALA, in Africa, XX. 405; II. 228; XV. 670.
 Soffeism, XV. 304.
 SOFFITA, XX. 405; III. 513—to find the soffit of an arch, XX. 729—moulds for, ib. 730.
 SOFIA, XX. 405. See Sophia.
 SOGDIANA, in Central Asia, XX. 405; V. 759.
 Soho, near Birmingham, IV. 732; V. 246.
 SOHRAU, town in Silesia, XX. 405.
 SOIGNIES, town in Belgium, XX. 405.
 SOIL, XX. 405; II. 266; XV. 150, 216—chemical and physical properties of, II. 389, 392, 397; V. 97—origin of, II. 389—mechanical improvement of, 399—classification of soils, ib., 266—improvement of, by burning, 401—mixing of, ib.—a source of the organic constituents of plants, 376—adapted for flax, 332—preparation of, for turnips, 315—comparative extent of useful soil in the Old and New Continents, 709—influence of, on the distribution of plants, V. 221—effects of drainage on the temperature of, VIII. 131—of gardens, XI. 700, 747—for nurseries, XVII. 766—power of producing food limited by the nature of, XVIII. 339—its full resources have never been called forth, 345—its influence on health, XIX. 610—of the tea-lands in China, XXI. 84—influence of, on the growth of timber, 268, 269—of England, VIII. 717—Russia, XIX. 518. See Mould, Subsoil.
 Soling of live stock, II. 326.
 SOISSONS, town in France, XX. 405.
 Sokoto, XI. 777, 778. See Saccato.
 Solan-goose, XVI. 814; IX. 762; III. 181.
 Solanaceæ, nat. order of plants, V. 201—their narcotic properties, XIV. 437; XXI. 293.
 Solander (Dr), IV. 419.
 Solar system, stability and permanence of, I. 811—solar heat, 950. See Astronomy, Heat.
 —microscopes, XIV. 789—time (see Time).
 SOLARIO (Antonio de), XX. 405.
 Solarium, genus of mollusks, XV. 382—fossil, XVII. 110.
 SOLDIER, XX. 406.
 Soldiers, diet of, VIII. 22—utility of training to, 25—diseases of, XIV. 442—interment of, among the Athenians, X. 344. See Army.
 SOLDIN, town in Prussia, XX. 406.
 Sole, fish, XII. 272—fishery of, IX. 649; in Ireland, 634.
 —of windows, III. 512.
 Solea, genus of fishes, XII. 272—fossil, XVII. 128.
 SOLECISM, XX. 406.

SOL—SOM

Solecurtus, genus of mollusks, XV. 350—fossil, XVII. 108.
 Solemya, fossil mollusks, XVII. 106.
 Solen, genus of mollusks, XV. 350, 347.
 Solenella, genus of mollusks, XV. 349—fossil, XVII. 106.
 Solenellidæ, family of mollusks, XV. 349.
 Solenhofen, lithographic stones of, XIII. 510—fossil insects and spiders of, XVII. 103.
 Solenidæ, family of mollusks, XV. 350—fossil, XVII. 108.
 Solenodon, teeth of, XVI. 451.
 Solenognathus, genus of fishes, XII. 315.
 Solenostomidæ, family of fishes, XII. 315.
 Solenostomus, genus of fishes, XII. 315.
 SOLENT (The), XX. 406.
 Solenus (Julius), on geography, X. 468.
 SOLESMES, town in France, XX. 406.
 SOLEURE, XX. 406, 408, 882.
 SOLFA, XX. 406.
 Solfataras, XVII. 624—mountain near Naples, ib.; XII. 637.
 SOLFERINO, village in Lombardy, XX. 406—battle of, in 1859, XIX. 645.
 SOLI, in Asia Minor, XX. 406.
 SOLICITOR, XX. 406—qualifications of, IV. 219—in the supreme courts, VIII. 395.
 Solid, definition of, X. 506, 507, 535—geometry of, 532—motion of a rigid solid, XIV. 387.
 Solidipeda, II. 774.
 Solidity, perception of, XIV. 573—a primary quality of body, 571.
 Solids, mechanical properties of, I. 874—application of force to, ib.—refractive power of, XVI. 558—dispersive powers of, 582—colours of dispersed light in, 693.
 Solidungula, family of mammals, XIV. 199—their bones, III. 77 *et seq.*—muscles, 92—organs of smell, 94—ears, 98—organs of voice, 101—nervous system, 104—teeth, 106—length of their intestines, 110.
 Solidus, coin, XVI. 386.
 Solier (M.), his writings on insects, IX. 18.
 SOLIHULL, town in Warwickshire, XX. 406.
 SOLIMAN II., the Magnificent, XX. 406; XII. 15; XVIII. 383; XXI. 369.
 SOLINGEN, Prussian town, XX. 407.
 SOLIS (Antonio de), historian, XX. 407.
 Solitaire, extinct bird, XVII. 634, 637.
 Solitaria, tribe of mollusks, XV. 332.
 SOLITARIES, XX. 407.
 Solitary system, in prison discipline, XVIII. 571.
 SOLLER, seaport of Majorca, XX. 407.
 Solly (Mr), on the brain, XVII. 560, 668, 669.
 Solly's Syllabus of Logic, XIII. 585.
 SOLO, in music, XX. 407.
 —Javanese river, XII. 703.
 SOLOFRA, town in Naples, XX. 407.
 SOLOMON, XX. 407; XII. 767; XVII. 193—aqueduct of, III. 333—Proverbs of, XVIII. 643—the probable author of Ecclesiastes, VIII. 372—psalms composed by, XVIII. 679—temple of, III. 439; XII. 740; altars in, II. 631.
 —SONG OF, XX. 407; VI. 198.
 SOLOMON'S ISLANDS, XX. 407; IV. 264.—seal, plant, V. 79.
 SOLOX, XX. 407—his government, IV. 194—code, 195—travels, ib.—legislation, 213—Calendar, VI. 79—conversation with Croesus, VII. 507.
 SOLOR, island, XX. 408.
 SOLOTHURN, or Soleure, XX. 408, 882.
 SOLSTICE, XX. 409; IV. 11.
 SOLWAY FIRTH, XX. 409; VIII. 237—manufacture of salt on its shores, VII. 551, *n. l.*
 —Moss, battle of, XIX. 775.
 SOLYMANIA, town in Kurdistan, XX. 409.
 SOMALPET, town in Hindustan, XX. 409.
 Somateria, genus of birds, XVI. 817.
 SOMAULI, or Somali, African race, XX. 409; II. 221, 222—country of, 228.
 SOMBOR, town in Hungary, XX. 409.
 Somerled, XI. 279; XIX. 752.
 SOMERS (John, Lord), XX. 409.
 —(Sir George), IV. 668.

SOM—SOR

Somers' Islands. See Bermudas.
 Somerset (Lord Charles), V. 641; XIII. 33.—(Edward). See Worcester, Marquis of.
 —House, London, XIII. 669; III. 485.
 SOMERSETSHIRE, XX. 409—population and value of property, VIII. 754.
 SOMERTON, XX. 411.
 SOMERVILLE (William), poet, XX. 411—his poem, The Chase, XII. 33.
 Somerville (Mrs), I. 922, *n. l.*—on the magnetic action of light, ib.—on the chemical rays of the spectrum, ib.—on the solar rays, XIII. 452; XIV. 12; XVI. 595, 596—on heat, XI. 266—her work on the mechanism of the heavens, IX. 677—on thunder-storms, XVII. 616—on the flora of Australia, 629—distribution of insects, 637—her Physical Geography, 642.
 —(Lord), on the want of salt as a punishment, XXI. 974.
 SOMMA, town in Lombardy, XX. 412.—town in Naples, XX. 412.
 SOMME, in France, XX. 412.
 SOMMERFELD, in Prussia, XX. 412.
 SOMMIERES, town in France, XX. 412.
 SOMNAMBULISM, XX. 413; XVII. 680. See Mesmer and Mesmerism.
 SOMNAUTH, town in India, XX. 446.
 SOMNER (William), antiquary, XX. 446.
 SONATA, XX. 446.
 Sonderbund, XX. 887.
 Sonderland (Dr), proves by an ingenious experiment the identity of cow-pox and small-pox, XXI. 502.
 SONDERSHAUSEN, town in Germany, XX. 446.
 SONDRIO, town in Lombardy, XX. 446.
 SONE, or Soane, Indian river, XX. 446.
 SONG, XX. 447—hunting songs, XII. 33.
 Songaria, in Asia, III. 732.
 Sonna, supplement to the Koran, XV. 303; XX. 907.
 Sonnerat, his voyage to New Guinea, IV. 262—on birds, XVI. 729.
 SONNINI DE MANONCOURT (C. N. S.), naturalist, XX. 447.
 Sonnites, Mohammedan sect, XV. 306; XX. 907, 908.
 Sonogla (M.), his work on insects, IX. 15.
 SONORA, Mexican state, XX. 447; XIV. 727, 718.
 SONSONATE, in Central America, XX. 447.
 SONUH, town in India, XX. 447.
 SOOLOO ISLANDS, XX. 447; XVIII. 513.
 Soosoo, cetaceous animal, XIV. 220.
 Soot, as a manure, II. 305—quantity produced in London, ib.—extraction of ammonia from, 722—as a dyestuff, VIII. 308.
 Soothsayers, VIII. 54.
 SOPHIA, Turkish town, XX. 447.—(Princess), XIX. 476.
 SÖPHISM, XX. 447; IX. 476. See Fallacy.
 SOPHIST, XX. 447, 370, 383, 384, 391; XVII. 795, 809—philology cultivated by the Sophists, 518—Plato's teaching distinguished from that of the, 797.
 SOPHOCLES, XX. 447—tragedies of, VIII. 138.
 Sophonisba, daughter of Hasdrubal, XIV. 334.
 Sophora Japonica, XVII. 762.
 SOPHRON, XX. 449.
 Sopwith (Mr), on the effects of fœd vapour on vegetation, XV. 193, *n.*
 SORA, town of Naples, XX. 449.
 Sorabian language, IX. 392.
 SOREA, Egyptian deity, XI. 386.
 Soranus, Ephesian anatomist, II. 754; XIV. 454.
 SORATA, mountain, XX. 449; III. 129; IV. 822—height of, XVII. 644.
 SORAU, town in Prussia, XX. 449.
 SORBAS, town in Spain, XX. 449.
 SORBONNE, XX. 449; XXI. 447.
 Sorby (Mr), his machine for producing lamination, XV. 159, *n.*—on current-marks on rocks, ib.—on cleavage, 179.
 Sorcerer-fish, XII. 281.
 Sorcery, XIV. 422—Malebranche on, I. 75. See Magic.

SOR—SOU

Sordawallite, mineral, XV. 82.
 Sorex, genus of mammalia, XIV. 150—dentition of, XVI. 451.
 Sorgho, XX. 798.
 SORIA, in Spain, XX. 449, 450.
 Soris, Egyptian deity, VIII. 454.
 Sorites, in logic, XIII. 632, 633.
 SOROCABA, town in Brazil, XX. 450.
 Sorosis, in botany, V. 139.
 Sorrel, wood, V. 187—common, XI. 745—French, ib.
 SORRENTO, town in Italy, XX. 450, 240.
 Sorting of tea, XXI. 85.
 Sosigenes, his improvement of the Calendar, VI. 77.
 Sosistratus, VI. 284.
 SOSNITZA, town in Russia, XX. 450.
 Soteris, Egyptian king, XI. 390.
 Soteriology, XXI. 184, 215. See Salvation.
 Sothic period, VI. 670.
 Soto (Dominic), I. 330—first writer who condemned the slave-trade, ib.
 SOTTEVILLE-LES-ROUEN, in France, XX. 450.
 Souari nut, XVI. 395.
 Soubeiran (M.), on polarisation, XVI. 681.
 Souchong-tea, XXI. 86.
 Soudah mountains, IX. 527.
 SOUDAN, in Africa, XX. 450; II. 211, 228; XI. 776; XVI. 267—languages of, II. 221.
 Souimangas, birds, XVI. 769.
 Soul, nature and essence of, I. 57; III. 172, 176; XIV. 567, 605, 619 and *n. l.*—seat of, 567, *n. l.*—presumption of its immortality from the analogy of the laws of nature, I. 58—Leibnitz on the, 128, 259—argument of Addison for the immortality of, 162—futility of the attempts to assimilate the faculties of brutes to those of men, 179, 181—ancient opinions as to the nature of, III. 309—Aristotle on, 548—Athenian speculation concerning, IV. 211—Have brutes souls? V. 700—Dr S. Clarke on, VI. 757—Dr Pryce, XVIII. 711—Priestley, 514—argument for its immortality from its simplicity, XIV. 619, *n. l.*—opinions of the ancients as to its immortality, I. 463—transmigration of souls, XI. 470; I. 463—Plato's notions of, XVII. 807—Pythagoras' opinions, XVIII. 711—operation of the Holy Spirit on, XXI. 218. See Immortality, Future Life, Mind, Spirit.
 Souleyet on the mollusca, XV. 327.
 SOULIÉ (M. Frederic), XX. 450.
 Soulina mouth of the Danube, IV. 742.
 Soulouque, emperor of Hayti, XI. 257.
 SOULT (N. Jean-de-Dieu), marshal of France, XX. 450; X. 137 *et seq.*, 207, 230—his Spanish campaigns, V. 604—his opinion of Sir J. Moore, XV. 529—his invasion of Portugal, XVIII. 388—his operations in Spain and Portugal, XXI. 821, 822, 824, 826.
 SOUND, XX. 451—nature of, II. 97—propagation of, 98; I. 892; XVIII. 70—velocity of, through different media, I. 891; II. 101—through water, I. 891; gases, II. 104—mathematical theory of the propagation of, I. 891—Chladni on, ib.—musical, 892; II. 107, 108; XV. 704—grave and acute, II. 109—beauty of, IV. 553—Lagrange on, XIII. 154—transposition of sounds in languages, XVII. 539—of electric currents, XXI. 631. See Acoustics, Echo, Music, &c.
 —(THE), strait in the Baltic, XX. 451; IV. 402—current in, 403—dues paid at, VII. 740, 748; VIII. 641.
 SOUNDING at sea, XX. 451, 26; XV. 157—machine for, 27—in the Atlantic, IV. 176.
 Soup-making, IX. 766—portable soup, 767.
 SOUR, or TSOUR, XX. 451. See Tyre.
 Sour-Krout, IX. 760.
 Soursal (M. A. de), V. 279.
 —(Pero Lopes de), V. 279.
 —(Thome de), V. 281.
 Souterasi, hydraulic obelisk, III. 335.
 South (Sir James), his transit instrument, IV. 152—his equatorial, 155.

SOU—SPA

- SOUTH (Robert), divine, XX. 451.
 —Down sheep, II. 346—wool of, XXI. 905 *et seq.*
 —Sea, XVII. 39—active volcanoes in, XXI. 603. See Pacific Ocean.
 —Sea Islands. See Polynesia.
 —Sea Scheme, IV. 507; V. 456; VXIII. 331.
 South-Eastern Railway, IX. 750; XIII. 67—dividend in 1845, XVIII. 786.
 SOUTHAMPTON, XX. 452; XI. 203—docks of, VIII. 75—battle of, 690.
 —county. See Hampshire.
 —in Massachusetts, XIV. 340.
 SOUTHCOTT (Joanna), XX. 453.
 Southern (John), his experiments on steam, XX. 557.
 —(THOMAS), dramatist, XX. 454; XXI. 172—dramatic works of, VIII. 164.
 SOUTHEY (Robert), XX. 454—his friendship with Coleridge, VII. 109—his account of a meteorite, XIV. 631—his poetry, XVIII. 126.
 —(Thomas), on wool, II. 353; XXI. 907.
 SOUTHPORT, village in Lancashire, XX. 456.
 Southsea, XVIII. 377.
 SOUTHWARK, XX. 456—Bridge, V. 361; XII. 588; XIII. 676; XIX. 11.
 —suburb of Philadelphia, XX. 456; XVII. 509.
 SOUTHWELL, in Nottinghamshire, XX. 456.
 —(Sir Robert), his method of preserving flowers, IX. 669.
 SOUTHWOLD, in Suffolk, XX. 456—naval engagement with the Dutch in the bay of, V. 426.
 SOVEREIGN, XX. 456—coin, XV. 441, 430; XI. 89.
 —power, XIII. 259—proprietary right of, considered, XI. 511.
 Sow. See Swine, Hog.
 Sowbread, plant, V. 203.
 Sowerby (Messrs), their works on mollusca, XV. 327.
 Sowerbya, fossil mollusks, XVII. 108.
 Sowing, implements for, II. 274.
 SOZOMENUS (Hermias), Historian, XX. 456.
 SPA, or Spaa, in Belgium, XX. 457.
 SPACCAFORNO, town in Sicily, XX. 457.
 Space, XIV. 561—Clarke's, Leibnitz's, and D'Alembert's views regarding the nature of, I. 142 and *n.*—Kant's notions respecting, 195, 280; XIII. 49—phrenological faculty of, XVII. 673—temperature of, I. 950.
 Space-penetrating power of telescopes, I. 840; XXI. 128.
 Spadaite, mineral, XV. 80.
 Spadix, in botany, V. 112, 115.
 Spafeld riots, V. 625.
 Spagnoletto. See Ribera (José de).
 SPAIN, XX. 457; IX. 403—history of, XX. 457—statistics of, 484—writers on ethics, I. 330—academies of the Moors, II. 61—academies of painting and history at Madrid, 68, 69—Royal Spanish Academy, 71—agriculture, 253—war with the Algerines, 567; with the Almoravides, 602—colonies in America, 700—population of Spanish America, 708—pointed and Moorish architecture, III. 449—influence of the Italian school on the architecture of, 453—army, 642—painters, 712; XVII. 75—Bibles, IV. 701—relations to Britain in the reign of James I., V. 386, 387—Gibraltar taken by the British, 448—War of the Succession, *ib.*; IV. 303; XII. 652—Quadruple Alliance, V. 455—wars with Britain, *ib.*, 456, 458, 465, 559, 598—war with Portugal, in 1762, 465—disputes with Britain about the Falkland Islands, 470; and Nootka Sound, 536—Peninsular war, 603—negotiations with Britain, in 1823, 637—conquests of the Carthaginians in, VI. 281, 292, 293; XIX. 310—Casiri's Catalogue of Arabian MSS. in, VI. 310—influence of chivalry in, 605—era of, 672—extent of coal area in, VII. 127—unsound policy as to the precious metals, 146—colonies, 149—miserable

SPA—SPA

- colonial system, XIV. 707, 708; II. 701; XVII. 780—not a flourishing country in the middle ages, VII. 187—corn-trade, 403—condition at the time of the Crusades, 530—war with England in the reign of Elizabeth, VIII. 712—Armada, *ib.*—trade with England, 732, 733—drama, 145, 146—insects, IX. 65—sieges of towns by the British, 823, 825—French invasions of, X. 94, 149—French intervention in, 184; their operations under the Duke d'Angoulême, 185—Isabella acknowledged by France, 209—Don Carlos, 210—the Spanish marriages, 222, 226, 231, 232—French trade with, 259—subdued by the Goths, 577—gypsies, XI. 171—historical writers, 549—war with the Dutch, 573, 574—the Inquisition introduced, XII. 387—treatment of the Jews, 779, 780, 783—language, XIII. 213—libraries, 409—orders of knighthood, 123, 51—events of 1808–1810, their effect in America, XIV. 708—silver mines of, XV. 231, 234—lead, 242—metallic produce of, 248—monarchy, 414—history of money, 436—coins, 442, 445; XVI. 360, 387—mortality, XV. 608—mysticism, 757—newspapers, XVI. 203—philology in the middle ages, XVII. 521—mountain system, 595—height of mountains, 642, 643—poetry, XVIII. 112; X. 403—postal system, XVIII. 424—proverbs, 643—railway statistics, 787—the Reformation, 828—reptiles, XIX. 15—romance, 265, 285—Roman conquests, 315—Caesar's campaign in, 326—school of sculpture, 865—the Two Sicilies under, XX. 259, 263—slave-trade, 322, 323—silk produced in, 278—effects of heavy taxes in, XXI. 39; and of their reduction, 72—manufacture of tobacco in, 294—universities, 492—wines, 884—Wellington's campaigns in, 821, 822 *et seq.*—weights and measures, 813—wool exported to Britain, 907, 911—map of, XX. Plate. See Spaniards, Spanish.
 Spain (New), increase of population in, XVIII. 341.
 Spalacotherium, fossil mammals, XVII. 160.
 Spalanx, genus of mammalia, XIV. 185.
 SPALATO, or Spalatro, XX. 494—palace of Dioclesian at, II. 126; III. 470.
 SPALDING, in Lincolnshire, XX. 494.
 —(JOHANN JOACHIM), German divine, XX. 495.
 —(WILLIAM), XX. 495.
 Spalding's improvement of the diving-bell, VIII. 62, 63.
 SPALLANZANI (Lazaro), XX. 496—on the electricity of the torpedo, VIII. 573.
 SPANDAU, Prussian town, XX. 498.
 Spandrel, III. 513; XI. 205.
 SPANHEIM (Ezechiel), XX. 498.
 Spaniards, their cruelties in America, II. 97, 701, 702—beards, IV. 528—their proceedings with the bucaniers, V. 709—their invasion of Chili, VI. 552; of Ireland, XII. 477, 479—wars in the Netherlands, IV. 595; XI. 562 *et seq.*—conquest of Mexico, VII. 418; XIV. 707—revolt of Mexico, 708—evils of their colonial system, 707—their treatment of the Haytians, XVII. 30—conquest of Peru, 462—discovery and occupation of La Plata, 779, 780 *et seq.*—conquest of Portugal, XVIII. 384—dominion in the Two Sicilies, XX. 259, 263; XII. 651 *et seq.*—three-decked ships first used by, XX. 127—their rule in Bolivia, IV. 830 *et seq.*—their hatred of the French, X. 150, *n.*—ships, and progress of discovery, XX. 124, 127, 138—their colonies in United States, XXI. 432.
 Spaniel, XX. 220.
 Spanish fowls, II. 356.
 —pointer, XX. 219.
 —sword, III. 632.
 —Town, Jamaica, XX. 498; XII. 672, 680.

SPA—SPE

- Spanish wax, XXI. 779.
 SPAR, XX. 498—heavy spar, XV. 94—fluor, 93—needle, 92—bitter, *ib.* See Iceland Spar, Calcareous Spar, &c.
 Sparedrus, genus of insects, IX. 133.
 Sparidae, or Sparoids, family of fishes, XII. 286, 287.
 Spark, electric, VIII. 544.
 Sparmann on birds, XVI. 729.
 Sparnodus, genus of fossil fishes, XII. 343.
 Sparoidei, family of fossil fishes, XII. 343.
 Sparring, XI. 170.
 Sparrow, hedge, XVI. 756—house, 760—Java, XII. 705.
 Sparrow-hawks, XVI. 743.
 Sparsispongia, fossil sponges, XVII. 92.
 SPARTA, or Lacedæmon, XX. 498; XIII. 145—army of, III. 625—wars with Athens, IV. 201 *et seq.*—in its social arrangements an example of communism, VII. 207—dancing at, 645—assistance to Macedonia given by, XIII. 761—ephor, IX. 269—town, XX. 503; XI. 13—wars with Thebes, XXI. 177, 178. See Laconia.
 SPARTACUS, XX. 503—revolt of, XIX. 322.
 Spartel (Cape), XV. 594.
 Spartivento (Cape), XX. 242.
 SPASK, two Russian towns, XX. 503.
 Spasm, XVII. 700—in domestic cattle, XXI. 565.
 Spatangidae, fossil echinoids, XVII. 99, 100.
 —zoophytes, XXI. 991.
 Spatangus, XVII. 99, 100.
 Spathe, in botany, V. 112.
 Spaulding (Solomon), his Mormon MS., XV. 597.
 Spavin, XXI. 558, 559.
 Spawn of salmon, IX. 589, 616, and *n.* I. See Ova.
 Spaying. See Castration.
 Speaker, The, of the British House of Commons, XVII. 296.
 Speaking machine, I. 893.
 Speaking-trumpet, II. 106; XXI. 360.
 Spearman (Major), his reform of the British artillery, III. 687.
 Spearmint, XI. 745.
 Speciale (Nicholas), on an eruption of Ætna, II. 194.
 SPECIES, in logic, XX. 503.
 —in natural history, III. 174; V. 174—producible only by original creation, III. 173—the production of fertile progeny not a proof of the identity of species of the parents, 174—distribution of species of plants over the globe, V. 222—number of species of animals, XVII. 631; of plants, 626—difference between human and all other, 641—in mineralogy, XV. 67.
 Specification, in logic, XIII. 569.
 —in architecture, III. 492—for farm offices, II. 371—of ships, XX. 197, 200.
 SPECIFIC GRAVITY, XX. 503; XI. 6; XII. 84—table of, 88, 89—Archimedes's knowledge of the doctrines of, III. 430—hydrostatic balance for determining, IV. 386—of oil and coal gas, X. 429—of minerals, XV. 56—of sea-water in different latitudes, XVII. 573—relative specific gravity of salt and fresh water, XVI. 81—of the water of the Dead Sea, III. 761.
 —heat, I. 761, 926, 930, 932, 958; XI. 273—term introduced by Prof. Gadolin, I. 761—its discovery inadvertently assigned to Dr Irvine, 927, *n.* 1—Regnault on, 958—of gases, 941, 953.
 Speckle on Fortification, IX. 818 *et seq.*
 Specodes, genus of insects, IX. 198.
 SPECTACLES, XX. 503—invention of, I. 624; XVI. 524—mentioned by Roger Bacon, XIII. 449—snow-spectacles, XIV. 800—Mr Airy's spherocylindrical spectacles, XVI. 567.
 SPECTRA, XX. 503; XVI. 695; XVII. 678.
 Spectre. See Apparitions.
 Spectro-bat, XIV. 148.
 Spectrum, prismatic, VI. 664; XIII. 451; XVI. 543, 580—lines of the, I. 915;

SPE—SPH

- XVI. 588, 544—action of gases on, 545—heat of the, I. 846, 954; XVI. 592—point of maximum heat in, I. 956—chemical rays of the, 921, 922; XVI. 594—action of nitrous acid gas on, I. 915; XVI. 597; and of the earth's atmosphere, I. 915; XVI. 598—Sir D. Brewster's analysis of, I. 915; XVI. 596—colours of, 580—irrationality of the coloured spaces in, 583—secondary spectrum, *ib.* 584—tertiary, 586—optical phenomena of, 587—physical properties of, 592—recent discoveries respecting, 596.
 Spectrum, genus of insects, IX. 157.
 Specular iron, XV. 108—ore of, XII. 540.
 Speculation in trade, profits of, VII. 197—pernicious effects of, *ib.*
 SPECULUM, XX. 503; XVI. 552 *et seq.*—for telescopes, XXI. 130, 145—flexure of, 130—modes of supporting, *ib.*—silvered glass specula, 131—construction of, 134 *et seq.* See Mirror, Telescope.
 —Humanæ Salvationis, early printed work, XVIII. 524, 526.
 Spedding (Mr), VII. 577.
 Speech, XVII. 679—characteristic of man, II. 775.
 Speechly (Mr), on the Duke of Portland's plantations at Walbeck, XXI. 271, 272, 273.
 SPEED (John), historian, XX. 503.
 Speed-cones, in mechanics, XIV. 398.
 Speeton clay, XV. 209 and *n.*, 210.
 Spiegel (Haquin), archbishop, XIX. 697.
 Speidell (J.), on logarithms, XIII. 553.
 Speke (Capt.), African traveller, XXI. 17.
 SPELMAN (Sir Henry), XX. 503; VIII. 231.
 SPENCE (Joseph), XX. 504.
 —(WILLIAM), entomologist, XX. 504; IX. 11—on entomology, 50 *et seq.*—coadjutor of Kirby in their Introduction to Entomology, XIII. 96. See Kirby and Spence.
 Spencer (Earl), library of, XIII. 399; XVIII. 530—Dibdin's Bibliotheca Spenceriana, VIII. 7; XVIII. 531.
 —(Herbert), on the brain as the seat of the mental faculties, XVII. 559—on over-legislation, XIII. 265.
 —(JOHN), theologian, XX. 504—on baptism, IV. 422.
 —(JOHN CHARLES), third earl, XX. 504; V. 660, 663.
 Spendius, VI. 291.
 Spener, of Berlin, on a fossil saurian, XVII. 140.
 —(PHILIP JAKOB), XX. 505.
 SPENSER (Edmund), XX. 505—on Ireland, IX. 618—his Shepherd's Calendar, XII. 359—on Sir P. Sidney, XX. 266, 268—merits of his poetry, XVIII. 121.
 —(Thomas), on multiplying works of art in metal by voltaic electricity, XXI. 635.
 Spermaceti, its use in making candles, VI. 170.
 —whale, XIV. 231—ambergris found in, II. 657; XIV. 233. See Cachalot.
 Spermatic chord, III. 69—fluid, XVII. 683.
 Spermatozoa, XXI. 975.
 Spermatozooids, V. 142.
 Spermoderm, V. 139.
 SPEUSIPPUS, Athenian philosopher, XX. 507.
 SPEY, river, XX. 508; XII. 438; XV. 576.
 SPEZIA, XX. 508; XIX. 633, 635.
 Sphacteria, IV. 205.
 Sphæria, fossil mollusks, XVII. 107.
 Sphæridium, genus of insects, IX. 117.
 Sphæroderus, genus of insects, IX. 96.
 Sphærodiota, family of insects, IX. 117.
 Sphæroderus, genus of fossil fishes, XII. 337.
 Sphæronites, fossil echinoderms, XVII. 99.
 Sphærostilbite, mineral, XV. 76.
 Sphærotus, genus of insects, IX. 132.
 Sphærozoia, zoophytes, XXI. 1008.
 Sphagebranchus, genus of fossil fishes, XII. 347.
 Sphagodus, genus of fossil fishes, XVII. 116.
 Sphigides, family of insects, IX. 195.

SPH—SPI

Sphegina, genus of insects, IX. 239.
 Sphenacanthus, genus of fossil fishes, XII. 339; XVII. 117.
 Sphene, mineral, XV. 110—pyro-electricity of, VIII. 561.
 Spheniscus, genus of birds, XVI. 811.
 — genus of insects, IX. 132.
 Sphenocephalus, genus of fossil fishes, XII. 343.
 Sphenoid bone, in man, III. 17—in the mammalia, 77—in birds, 85.
 Sphenolepis, genus of fossil fishes, XII. 347.
 Sphenosaurus, genus of fossil reptiles, XVII. 146.
 Sphenotrochus, fossil corals, XVII. 97.
 SPHERE, XX. 508—in geometry, X. 540, 558—projection of the, 488 *et seq.*; XVIII. 639—mensuration of, XIV. 514—refraction of rays by, XVI. 564—celestial, IV. 1—right, parallel, and oblique sphere, 5—terrestrial, X. 479—attraction of, IV. 223—movement of heat in a, I. 948—problem of the, 949—how to develop, in masonry, XX. 730—Tatius' work on, XXI. 35.
 Spheres, music of, III. 545, n. 4.
 Spherical aberration, destruction of, XXI. 121.
 — trigonometry, XXI. 343.
 Spheriodactyli, reptiles, XIX. 36.
 SPHEROID, XX. 508—definition and properties of elliptical, IV. 221—attraction of spheroids of revolution, 225—mensuration of, XIV. 517—sections of, in masonry, XX. 728.
 Spheg, genus of insects, IX. 195.
 Spingides, family of insects, IX. 209.
 SPHINX, fabulous monster, XX. 508—Egyptian, VIII. 501, 508.
 — genus of insects, IX. 209.
 Sphyræna, genus of fishes, teeth of, XVI. 422—fossil, XII. 346.
 Sphyrænoidei, family of fossil fishes, XII. 346.
 Sphyrænodus, genus of fossil fishes, XII. 346.
 Sphyrna, genus of fossil fishes, XII. 341.
 Spice Islands, XV. 404.
 Spices, IX. 765.
 Spider-wort order of plants, V. 213.
 Spiders, III. 373—power of reproducing lost parts, 375—ascend of, into the air, 376—webs, 374, 375—may be eaten with impunity, 376—bird-catching, 377 hunting-spider, 384—diadem-spider, 381—sea-spiders, VII. 541—their power of abstinence, III. 180—colour of their webs, XVI. 622—use of the webs in micrometers, XIV. 744.
 Spigeliaceæ, nat. order of plants, V. 199.
 Spigelius (Adrian), on anatomy, II. 761.
 Spike and Spikelet, in botany, V. 115.
 Spikenard, plant, V. 196.
 Spilbergen, his visit to the Ladrone islands, XVIII. 269.
 Spiller and Crooks, their mode of preserving collodion plates, XVII. 548.
 Spilsbury (Mr), his method of tanning, XIII. 308.
 SPILSBY, in Lincolnshire, XX. 508.
 Spinacanthus, genus of fossil fishes, XII. 346.
 Spinaceous plants, XI. 741.
 Spinachia, genus of fishes, XII. 280.
 Spinacidae, family of fishes, XII. 324.
 Spinacorchinus, genus of fossil fishes, XII. 342.
 SPINAGE, or Spinach, XX. 508; V. 203—culture of, XI. 741.
 Spinal cord, in man, III. 55; XVII. 668—function of, 674—in brutes, III. 103—in fishes, XII. 218, 219; XVII. 669.
 Spinax, genus of fishes, XII. 325—fossil, 340.
 SPINAZZOLA, town in Naples, XX. 508.
 Spindle, XX. 508.
 Spindle-tree, XVII. 762.
 — order of plants, V. 189.
 Spine (human), bones of, III. 4—canal of, 8—motions of, ib.—structure and functions of, XVII. 672—disorders of, 700—effect of poisons on, 702—of brutes, III. 75. See Spinal Cord.

SPI—SPI

Spinel or Spinelle, XV. 87; XVII. 623—spinelle ruby lenses, XIV. 768.
 Spines of plants, V. 79—of animals, XIV. 133.
 SPINET, or Spinnet, XX. 508.
 Spinigera, fossil mollusks, XVII. 109.
 Spinigrada, zoophytes, XXI. 984.
 SPINNING, XX. 508—of silk, 281, 283, 285—of ropes, XIX. 403. See Cotton-manufacture, Silk-manufacture.
 Spinning-frame, Arkwright's, III. 609; VII. 442; XX. 510.
 Spinning-jenny, III. 609; VII. 441; XX. 510.
 SPINOLA (Ambrosio), Marquis de, XX. 512; XI. 572.
 — (Maximilian), his works on insects, IX. 17.
 SPINOZA (Benedict de), XX. 512; VII. 235—his early life, I. 144 and n. 3, 4—Fontenelle's opinion of his system of philosophy, 145—his doctrines, in their practical tendency, the same as atheism, ib.—points in which he has been misunderstood, ib., 146—his ideas of God, 145, n. 3—coincidence of his principles of government with those of Hobbes, 146, n.—tendency of his speculations to degrade human nature, ib., n.—his private life and character, 264—exposition of his system, XVII. 234—on the authenticity of the Scriptures, XIX. 828—Jacobi on, XII. 668.
 Spio, genus of annelides, XI. 298.
 Spira (Francis), XIX. 827.
 — (John de), printer, XVIII. 532.
 Spiracles, or breathing pores, of insects, IX. 48.
 Spiræideæ, nat. order of plants, V. 191.
 Spiral vessels of plants, V. 70, 71.
 — pump, XII. 182.
 SPIRES, town in Bavaria, XX. 515—diets at, XIII. 734, 735; XVIII. 822.
 — in architecture, III. 449, 481, 513—Gothic, 410—medieval, XX. 735—of Strasburg cathedral, 747.
 Spirialis, genus of mollusks, XV. 361.
 Spirifera, genus of mollusks, XVII. 104.
 Spiriferidae, family of mollusks, XV. 338—fossil, XVII. 104.
 Spirit, ancient opinions respecting, III. 308—use of the word in Scripture, XXI. 217. See Dæmon, Soul.
 — (Holy). See Holy Ghost.
 Spirit-level, XXI. 347.
 Spirit-rapping, XX. 445.
 Spirits, effects of excessive indulgence in, VIII. 24—number of gallons distilled in the United Kingdom, 51, 52—quantities charged with excise duties, 731—imports of, into the United Kingdom, 735—distillation of, from potatoes, 51; XVI. 326—quantity distilled in Ireland, XII. 521—France, X. 247, 256—duties paid by retailers of, XIII. 435—Scotch manufacture of, XIX. 805—expediency of a duty on, XXI. 41—excise duties, 59, 73—effects of the reduction of the duties on, 71—increase of duties on, 73—equalisation of duties, ib.—quantities charged with consumption duties, 74. See Alcohol, Distillation.
 Spirituality of the Gospel Dispensation, I. 481.
 — of God, XXI. 190.
 Spiritus asper and lenis, II. 613; III. 760.
 Spiriting, fish, XII. 245.
 Spirobranchus, genus of fishes, XII. 290.
 Spirogyrus, fossils, XVII. 101.
 Spiroptera, entozoa, XXI. 981.
 Spirorbis, genus of annelides, XI. 294.
 Spirula, genus of mollusks, XV. 398.
 Spirulidae, family of mollusks, XV. 398.
 Spirulirostra, fossil cephalopods, XVII. 114.
 SPITALFIELDS, XX. 516; XIII. 659; XIV. 809—silk-weavers of, XX. 276; distress among, in 1764, V. 469.
 SPITHEAD, XX. 516; XVIII. 379.
 Spittal of Berwick, IV. 681, 682.
 Spittals' Hospital, Stirling, XX. 702.
 Spittle. See Saliva.
 SPITZBERGEN, XX. 516—glaciers of, X. 635

SPI—SPU

—flowering plants of, V. 226; XVII. 626; XVIII. 178.
 Spix (Dr), on Brazil, II. 670 *et seq.*
 Splanchnic nerve, III. 58.
 Spleen, erectile tissue of the, II. 799—atomy and functions of, III. 62; XVII. 657—diseases of, in domestic animals, XXI. 570.
 Spleenwort, V. 216.
 Splint, XXI. 558.
 Splint-coal, VII. 118; XII. 543.
 Spodumene, mineral, XV. 72.
 SPOHR (Ludwig), violinist, XX. 516.
 SPOILS, XX. 517.
 SPOLETO, in the Papal States, XX. 517—delegation of, XVII. 243.
 SPONDEE, XX. 518; IX. 770.
 Spondylis, genus of insects, IX. 144.
 Spondylus, genus of mollusks, XV. 348—fossil, XVII. 106.
 Sponge, in baking, IV. 380.
 SPONGES, XX. 518; XXI. 1008—fossil, XVII. 92—use of, in diving, VIII. 57.
 Spongioles, or spongelets, of plants, V. 76.
 Sponsors, in baptism, IV. 424.
 Sponzilli on Napoleon's military tactics, XXI. 703.
 Spool, in net-making, XIX. 90.
 Spoon-bills, birds, XVI. 800.
 Spoon-wheels, XII. 169.
 SPORADES, islands, XX. 518.
 Sporangia, in botany, V. 143.
 Spore, in botany, V. 141, 142.
 Sporocarps, in botany, V. 144.
 Sporting dogs, XX. 218.
 Sports, English. See Hunting, Shooting, &c.—Egyptian, VIII. 441.
 Sportsmen, English, XX. 211.
 Spots, solar, IV. 25, 28—theories regarding, 29—their rotatory motion, 88—their connection with the temperature of the seasons, 30; XIV. 637—works on, IV. 31—their appearance periodical, XIV. 637—observed by Galileo, X. 376—lunar, IV. 42—on the planet Mars, 66.
 SPOTSWOOD (John), XX. 518—his account of Hungus's vision of St Andrew's Cross, XIX. 749.
 Spout-fish, XV. 350.
 Sprague (Major), anecdote of certain Indians related by, VI. 146.
 Sprains in cattle, XXI. 559.
 SPRAT (Thomas), bishop, XX. 518—his estimate of Bacon's genius, I. 241—his defence of the Royal Society against the clergy, XIV. 461.
 — fish, XII. 236; IX. 763—sale of, in London, 649—fishery of, in Britain, ib.—in Ireland, 634—Sicily, 247.
 Spratella, genus of fishes, XII. 237.
 Spree, river, IV. 667.
 SPRENGEL (Kurt), botanist, XX. 518.
 Sprenger's catalogue of MSS. in the libraries of the king of Oudh, XIII. 431.
 Spring, season, the young of most animals produced in, III. 182—beauty of, IV. 544.
 — in mechanics, of clocks and watches, VII. 14, 21 *et seq.*—spring-clocks, 18—of coaches, 43.
 Spring-buck, antelope, XIV. 210.
 Spring-tide, XXI. 249.
 SPRINGFIELD, in Massachusetts, XX. 519; XIV. 340.
 — in Illinois, XX. 519.
 — in Ohio, XX. 519.
 SPRINGS, XX. 519; XVII. 601—thermal, 602—gaseous, ib.—intermittent, ib.; XVIII. 81—indicate the medium temperature of climate, VI. 768—boiling springs, in Iceland, XII. 201; in St Michael, IV. 336; Barbadoes, 430—hot springs of Baden, 361; among the Himalayas, XI. 443. See Mineral Waters.
 SPOTTAN, Prussian town, XX. 519.
 Spruce fir, XVII. 756—hemlock spruce, V. 209—timber of, XXI. 275.
 Spur, XI. 686—spur-money, XIII. 112—battle of the spurs, XVII. 468.
 Spur-wing, bird, XVI. 816.
 Spurgewort, order of plants, V. 206.

SPU—STA

Spurius Cassius, XIX. 299.
 — Maelius, XIX. 302.
 SPURZHEIM (Johann Gaspar), XX. 519—his connection with Gall, X. 384—on phrenology, XVII. 558, 561, 562.
 Spyne, or Spynace, XX. 123.
 Squali, sub-order of fishes, XII. 323—fossil, 341.
 Squalidæ, fossil fishes, XVII. 118.
 Squalo-rajæ, fossil fishes, XII. 342.
 Squamipennes, or Squamipennæ, fishes, XII. 299—fossil, 344.
 Squamous suture, III. 27.
 Square, X. 508—method of least squares, XVIII. 633; I. 819.
 — barometer, IV. 454.
 — root, extraction of the, III. 606.
 SQUARING of the circle, XX. 520; X. 530. See Quadrature.
 Squatarola, genus of birds, XVI. 797.
 Squatina, genus of fishes, XII. 325, 319, 320, 323.
 Squatinidæ, family of fishes, XII. 325.
 Squids, mollusks, XV. 399, 400.
 Squill, plant, V. 213.
 Squillace, gulf of, XX. 242.
 Squinting, origin of, XVI. 694.
 Squire, in chivalry, VI. 613.
 Squirrels, XIV. 178; XXI. 548—fur of, X. 349—in Canada, VI. 142—Alpine squirrel, XX. 489.
 Stability of structures, XIV. 380—of position and friction, 381, 382—of floating bodies, XX. 152—statical stability, ib.—of the solar system, I. 811—principles of, in masonry, XX. 715.
 Stable, XI. 663, 669—specifications for, II. 372.
 Stackhouseiaceæ, nat. order of plants, V. 189.
 Stacks of corn, II. 314.
 STADE, in Hanover, XX. 523.
 STADIUM, XX. 524.
 — edifice in ancient Athens, IV. 170.
 STAEL (Anne M. L. G. Necker, Madame de), XX. 524—on the literary life of Voltaire, and the French philosophy of the eighteenth century, I. 277—on Kant's Critique of Pure Reason, 190—mistakes of, respecting the philosophy of Locke and Leibnitz, ib., n. 3—on German philosophy, ib., n. 2—on Fichte's philosophical system, 200—her death, X. 178—her hatred of Napoleon, XV. 791, n.; X. 129—her account of Mirabeau, XV. 260—her acquaintance with Schlegel, XIX. 723—her exertions in favour of Talleyrand, XXI. 12—character of her novels, XIX. 289.
 Staff, in the army, III. 665. See Army.
 — college, in the army, XXI. 699.
 STAFFA, island, XX. 528; XI. 278; XV. 190—Sir Joseph Banks's visit to, IV. 419.
 STAFFORD, English town, XX. 528, 531.
 — (Edward), Duke of Buckingham, VIII. 698.
 STAFFORDSHIRE, XX. 529—potteries of, VIII. 732; XVIII. 433—population, value of property, &c., VIII. 754—iron manufacture in, XII. 561—perpetual Staffordshire almanack, II. 599—boiler-plates, XX. 634.
 Stag, XIV. 208—order of the golden stag, XIII. 121.
 Stag-hound, XI. 764.
 Stag-hunting, XII. 39.
 Stage, in theatres, VIII. 135.
 Stage-coaches, VII. 43.
 Stagirius, or Stagira, birth-place of Aristotle, III. 533.
 STAGNELIUS (Erik Johan), XX. 531; XIX. 701.
 STAHL (Georg Ernst), XX. 531—doctrines of, XIV. 528.
 STAINDROP, in Durham, XX. 532.
 Stained glass, X. 667.
 STAINES, in Middlesex, XX. 532—iron bridge, XII. 579.
 Stainton (H. J.), his works on insects, IX. 14.
 Stainville (M. de), IV. 479. See Choiseul (Duke de).
 Stair (Lord). See Dalrymple (James).

STA—STA

Stair (Rev. J. B.), his description of an annelid, XI. 297.
 STAIRCASE, XX. 532, 732. See Stairs.
 — shell, XV. 382.
 Stairs, III. 489; XX. 732—building of, V. 739—measurement of, 754—construction of wooden, XII. 813—fixing the landings of, 812—construction of, to guard against fire, VII. 331—solid and aris steps in, XX. 732.
 Staking of horses, XXI. 570.
 Staktometer, Brewster's, XII. 87.
 Stalactites, XV. 143.
 Stalagmites, XV. 143.
 STALEYBRIDGE, in Lancashire, XX. 532—steam-engine in a mill at, 607.
 STALIMENE, island, XX. 532; XIII. 331.
 Stall-feeding of cattle, II. 345.
 Stallion, II. 339; XI. 633 *et seq.*
 STAMENS of plants, XX. 532; V. 117, 118, 125, 126 *et seq.*—transformations of, 129.
 STAMFORD, in Lincolnshire, XX. 532—custom of Borough-English at, XVIII. 516.
 Stamford-bridge, battle of, VIII. 663.
 STAMMERING, XX. 533.
 Stamp Act, for America, V. 469—its repeal, 470.
 Stamp-duties, XXI. 64—when first introduced into England, 65—on policies of insurance, XII. 409—on leases, XIII. 305—on newspapers, XVI. 184, 189, 190—in Scotland, XIX. 809.
 Stamping of coins, VII. 92.
 Stamps, manufacture of postage, XVIII. 415.
 Stanches, on rivers, XVI. 63.
 Standard of value, XV. 419—of money, 428, 430; VII. 72—variations of, *ib.*; XV. 431, 437—bad effects arising from, *ib.*
 — battle of the, XIX. 752.
 — in botany, V. 124.
 — Life Assurance Company, XII. 409, 411.
 — Royal, IX. 651.
 — weights and measures; XXI. 799, 801.
 Standards of the Scotch Established Church, XVIII. 493—Free Church, 495.
 Standing, muscles employed in, III. 41.
 Standinger (Otto), his work on insects, IX. 24.
 STANHOPE (Charles), Earl of Chesterfield, XX. 535—his method of fire-proofing, XIII. 438—his printing-press, XVIII. 544.
 — (GEORGE), divine, XX. 536.
 — (Lady Hester), XX. 535.
 — (PHILIP DORMER), Earl of Chesterfield, XX. 535—his government of Ireland, XII. 494—his treatment of Dr Johnson, 796, 797.
 STANISLAS LESZCZYŃSKI, king of Poland, XX. 536, 853, 854.
 — Polish kings, XVIII. 145, 160.
 STANISLAWOW, in Austrian Galicia, XX. 537.
 Stanley (Lord), on the importance of statistics, XX. 550.
 — (Mr.), measure for the abolition of slavery introduced by, XX. 325.
 — (Captain Owen), his survey of the coasts of New Guinea, IV. 263.
 — (THOMAS), XX. 537.
 STANNARY COURTS, XX. 537.
 Stannine, mineral, XV. 121.
 Stannite, mineral, XV. 109.
 STANOVOI Mountains, XX. 537.
 Stansbury (Mr. O.), his mode of arithmetical computation for the blind, VII. 616.
 Stapelias, plants, region of, V. 228; XVII. 629.
 Stapfer's account of Berne, IV. 671.
 Staphyleaceæ, nat. order of plants, V. 189.
 Staphylinus, genus of insects, IX. 103.
 Staple Inn, Chancery, XII. 385.
 — of wool, XXI. 905—merchants of the, 908.
 Star of Bethlehem, plant, V. 150.
 STAR-CHAMBER, XX. 537; V. 394, 398; XIII. 356.
 Star-fish, XXI. 991.
 Star-forts, IX. 809.
 STARAJA RUSSA, in Russia, XX. 537.
 Starboard tack, XVI. 13.

STA—STA

STARCH, XX. 537; II. 380; V. 72, 320; IX. 755; XIX. 610—a constituent of flour, IV. 379—chemical character of, VI. 515; 516—its conversion into sugar in malting, V. 320—sugar of, VIII. 47—its conversion into dextrine, II. 380—(see Dextrine)—lichen-starch, *ib.*; IX. 756—inuline, *ib.*; II. 380—nutritive properties of, VIII. 19.
 Starching of cotton cloth by bleachers, IV. 766.
 STARGARD, town in Pomerania, XX. 537.
 — town in Prussia, XX. 538.
 STARK (William), physician, XX. 538—his experiments on digestion, VIII. 21, 22.
 Starckenburg, in Hesse-Darmstadt, XI. 362.
 Starkie (Mr.), on the law of wagers, X. 394.
 Starling, bird, XVI. 763.
 STARDUB, in Russia, XX. 538.
 Stars (fixed), IV. 79, 3—aberration of, II. 35—acceleration, 74—scintillation of, IV. 10—arrangement of, 79—distance, magnitude, and number of, 81—proper motions of, 82; I. 845, 861—parallax of, IV. 81; I. 864, 841—catalogues of, IV. 80, 95, 143; III. 791; VI. 331—apparent magnitude, number, and distribution of, IV. 95—double stars, I. 841, 861, 862; IV. 84—multiple, *ib.*—variable, *ib.*; I. 862—brightness of, 862; when seen off the southern coast of Africa, II. 216—knowledge of, among the Druids, VIII. 186—how to take the altitude of, XVI. 32—spurious discs of, 618—fixed lines in star light, 591—shooting-stars, XIV. 684; VIII. 588; IX. 586—determination of the longitude by, XIII. 689. See Nebulæ, Milky-way.
 — in pyrotechny, XVIII. 707.
 Starvation, power of different animals to resist, III. 180—case of voluntary, VIII. 23—death from, XIV. 430.
 Starwort, order of plants, V. 206.
 Stassfurthite, mineral, XV. 94.
 State, definition of, X. 731—error of making church and state one community, I. 539.
 — constitutions of the United States, XXI. 431.
 STATEN ISLAND, XX. 538; XVI. 213.
 Stater, Grecian gold coin, XVI. 360.
 States of Europe, IX. 397—states-general of Holland, XI. 586—convocation of the states-general, X. 44—arms of, XI. 322—duties of, to each other, XV. 569; to their subjects, 570—in the United States, XXI. 419.
 Statical balance, IV. 452—statical stability, XX. 152—statical electricity, VIII. 533; I. 987.
 STATICS, XX. 538—principles of, I. 721.
 Stationary beam-engines, XX. 603.
 Stationers, V. 30—Stationers' Company, VII. 356—their registry of books, 359—their almanacs, XII. 598.
 Stations, railway, XVIII. 765—terminal, 765, 766, 770, 771—intermediate, 772—station works, 768—fittings, 776—signals, 778—for locomotives, 774 *et seq.*
 STATISTICS, XX. 549—Achenwall the founder of the science, II. 84—distinct from political economy, XVIII. 224—of vegetation, V. 224—agricultural, of Scotland, XIX. 791—of textile industry, XXI. 791. See Census, Population, Sanitary Science, and the different countries.
 STATIUS (P. Papinius), senior, XX. 552.
 — (P. PAPINIUS), Roman poet, XX. 552; VIII. 142—Pope's translations from, XVIII. 325.
 Statuary porcelain, XVIII. 439.
 — See Sculpture.
 Statues, Greek, III. 707—casting of, V. 676—gigantic figures erected by the Egyptians and Babylonians, VII. 716—measurement of ancient, VIII. 172—foundry of, IX. 843—ancient coloured, XIX. 844—in London, XIII. 675—Rome, XIX. 369—Glasgow, X. 650.
 Stature (human), II. 691; III. 2—of the Patagonians, II. 691; XVII. 335.
 Statute-labour, in Scotland, XXI. 43.

STA—STE

Statute-law, XIII. 255—reason for not reducing unwritten law to, 269—defective nature of English, 271; its reduction into a practical code, 273, *n.*
 Staubach, falls of the, XVII. 605.
 Stäudlin on the character of the Pharisees, XVII. 505.
 STAUNTON (Sir George Leonard), XX. 553—on China, VI. 564, 568, 596—his translation of Chinese works, 578, 577.
 — (Captain), his defence of Corygaum, VII. 422.
 Staurolite, or Staurotide, mineral, XV. 86.
 STAVANGER, in Norway, XX. 553.
 Staves of casks, VII. 342.
 STAVROPOL, in Russia, XX. 553; XIX. 521.
 Stays, missing, in sailing, XX. 14.
 STEAM, XX. 554; XI. 270, 272—general considerations regarding the properties, phenomena, and application of, XX. 554, 557, 572—ordinary or saturated steam, 564; relation between its pressure and temperature, *ib.*—constituent heat of, 566—density, 568—distribution and mode of action in the steam-engine, 595 *et seq.*—work of, in the steam-engine, 617, 620, 627—Watt's first experiments on, I. 867—its elasticity, 953, 958—its introduction into nautical affairs, 869; XX. 20—propulsion of vessels by, 159—its use for horticultural purposes, XI. 721—its application to domestic purposes, 272—steaming of wood for bending, XII. 811; for preserving, XX. 167—colour of, XVI. 692—history of its application to locomotives, XVIII. 779. See Evaporation, Steam-engine, &c.
 Steam-carriages, I. 881. See Locomotives.
 Steam-coal, VII. 118.
 Steam-colours, in dyeing, VIII. 316.
 Steam-draining, VIII. 131*.
 STEAM-ENGINE, XX. 573—origin and history of, I. 866; XX. 573—era of the Marquis of Worcester, 574; I. 866; of Watt, XX. 576; I. 807 (see Watt)—history of the modern steam-engine, XX. 589—late improvements in, XIV. 277—atmospheric engine, I. 867, 868; XX. 575 *et seq.*—double-acting, I. 868—high-pressure engine, principle of, VI. 460—beam engines, XX. 603, 607—direct action, 608, 610, 641—pumping, 611; I. 868—portable, 614—marine, 641—screw, 643 *et seq.*—long and short stroke, 646—combined cylinder, 647—its influence on the manufacture of iron, XII. 539; engine used in, 558—use of, in mining, XV. 227—boring of cylinders for, V. 43—wooden beams for, VI. 267—congelation might be connected with, VII. 107—history of its introduction into cotton manufacture, 446—use and manufacture of, in France, X. 256—governor, XIV. 410—for farms, II. 281; XX. 614—for draining Haarlem Meer, XI. 173. See Steam, Steam-Navigation, Locomotive, Watt, Boilers.
 Steam-hammer, XI. 201; XII. 563—its use in making anchors, XX. 24.
 STEAM-NAVIGATION, XX. 636—introduction of, I. 869; XX. 136—its benefits to Britain, VII. 457—mistake frequently committed in, XX. 22—skill in some points of seamanship deteriorated by, 23—introduced into the postal service of Britain, XVIII. 425—steam navy of Britain, XVI. 95, 96; XX. 640, 669, 670; VIII. 741—vessels belonging to the different ports of England, 738; Scotland, 739; Ireland, *ib.*—at the different British colonies, 740—of France, X. 273—mode of ascertaining the tonnage of steam-vessels, XXI. 304; allowance for engine-room in, 306, 307—of the United States, 426.
 Steam-press, in printing, XVIII. 559; lithographic, XIII. 513.
 Stearic acid, II. 381; VI. 170.
 Stearine, VI. 510; IX. 757; XVI. 492.
 Steatite, XV. 79—eaten by the natives of New Caledonia, VI. 266—its use in manufacture of porcelain, XVIII. 439—in Cornwall, VII. 408.

STE—STE

Steatornis, genus of birds, XVI. 759.
 STEEL, XX. 672—annealing of, III. 218—composition of, VI. 490—tempering of, VII. 600—engraving on, VIII. 809—specific gravity of, XII. 88—magnetic power of, XIV. 9—probable early use of, XI. 410—optical properties of, XVI. 684—art of converting iron into, XVIII. 815—steel-plates for ships, XX. 175—cohesion of, 757—tensile strength of, 779. See Cutlery, Iron.
 Steel-bow, in farm leases, II. 365.
 Steel-pens, XVII. 399.
 STEELE (Sir Richard), XX. 672—his connection with Addison, II. 134, 135—Swift's pamphlet against, XX. 873—his connection with Drury Lane Theatre, XXI. 173.
 STEELYARD, XX. 672; IV. 385; XIV. 415; XXI. 797—association of the, XI. 215.
 STEEN (Jan), painter, XX. 673; XVIII. 75.
 Steenboek (General), XX. 851 *et seq.*
 Steenstrup (Professor), on the sexual characters of the Cephalopoda, XV. 401, *n.* 4—on alternate generation, XVII. 688.
 Steeple, in architecture, III. 513.
 Steeple-chace racing, XI. 688.
 Steering. See Seamanship.
 STEEVENS (George), XX. 673—on the popularity of Shakspeare, 71.
 STEFFANI (Agostino), musician, XX. 673.
 STEFFENS (Heinrich), XX. 673.
 Stegana, genus of insects, IX. 256.
 Steganodictyum, fossil sponges, XVII. 92.
 Steganophthalmata, zoophytes, XXI. 1001.
 Stegostoma, genus of fishes, XII. 323, 321.
 STEIN (H. F. Karl, Baron von), XX. 674.
 STEIN-AM-ANGER, town in Hungary, XX. 675.
 Stein-bock, in zoology, XIV. 212.
 Steinhell, his electric telegraph, I. 986; XXI. 100, 102, 104—his mode of silvering specula, 132.
 Steinnannite, mineral, XV. 119.
 Steinthal (H.), on philology, XVII. 517.
 Steele, in architecture, III. 513.
 Stelis, genus of insects, IX. 200.
 Stella, XX. 871, 874.
 Stellatæ, nat. order of plants, V. 196.
 Steller, in zoology, XIV. 220.
 Stelleria, extinct mammals, XVII. 176.
 Stellerida, zoophytes, XXI. 991.
 Stellerus, genus of mammalia, XIV. 219.
 Stello, genus of reptiles, XIX. 31.
 Stellispongia, fossil sponges, XVII. 93.
 Stellite, mineral, XV. 75.
 Stells for sheep, II. 352, 358.
 STELVIO, pass across the Alps, XX. 675.
 Stem of plants, various forms of, V. 78—internal structure, 80—exogenous, *ib.*—endogenous, 83—acrogenous, 84—subterranean, 79—physiology of, 101.
 Stemmata, and stemmatic eyes, in insects, IX. 46, 47.
 STENDAL, Prussian town, XX. 675.
 Stenelytra, family of insects, IX. 131.
 Steneosaurus, fossil reptiles, XVII. 142—teeth of, XVI. 437.
 Stennis, stones of, XVI. 718.
 Steno (Nicholas), anatomist, II. 761, 762—on the lymphatics, 804.
 Stenodactylus, genus of reptiles, XIX. 37.
 Stenodus, genus of fishes, XII. 245.
 STENOGRAPHY, XX. 675; II. 617.
 Stenopterus, genus of insects, IX. 145.
 Stenopteryx, genus of insects, IX. 259.
 Stenorhynchus, genus of mammalia, XIV. 172—dentition of, XVI. 463.
 Stenostoma, genus of insects, IX. 133.
 Stenotrachelus, genus of insects, IX. 132.
 Stenus, genus of insects, IX. 103.
 Step, in architecture, V. 739—steps of a ship, XX. 190.
 Stephanite, mineral, XV. 120.
 STEPHANUS (Byzantinus), XX. 679.
 — (CHARLES), XX. 680.
 — (HENRY), printer, XX. 679—his Thesaurus, XVII. 523, 526.
 — (HENRY), XX. 680—Scapula's conduct to, XIX. 702.
 — (PAUL), XX. 681.
 — (ROBERT), XX. 679; XVIII. 543—his Thesaurus, XVII. 523, 526—his

STE—STE

- Bible and Testament, IV. 695, 698; XIX. 837.
- STEPHANUS (Robert), XX. 680.
- genus of insects, IX. 188.
- STEPHEN (Sir James), XX. 681—on Gregory VII, XI. 51—on Jansen's Augustinus, XII. 686.
- sovereigns so named, XX. 681—of Hungary, XII. 12, 20—king of England, VIII. 671—his war with Scotland, XIX. 751.
- Stephen's ink, XII. 383.
- Memoirs of John Horne Tooke, XXI. 310.
- Stephens (George), on irrigation, XII. 613.
- (H.), his collection of spurious odes of Anacreon, II. 744.
- (Henry), his Book of the Farm, II. 322.
- (J. F.), his works on British insects, IX. 14.
- (J. L.), on the architectural remains of South America, III. 502; II. 697—his incidents of travel, ib.
- STEPHENSON (George), XX. 681—his early history and character, I. 883—his safety lamp, ib.—his improvements in locomotive engines, ib.; XVIII. 779—adapts railways to them, I. 884—his experiments on the friction of trains, ib.—his locomotives adapted for the Manchester and Liverpool Railway, 885—his death, 886—passenger locomotive by, XX. 614—his valve-gear for locomotives, 585—his link-motion, 586; XIV. 401—his opinion on gradients, XVIII. 794.
- (ROBERT), XX. 682; I. 876, 878, 886—his tubular bridges, 877; XII. 607, 608—his improvements in locomotives, XVIII. 779, 780—on railway legislation, 798—his plan for working railways on lease, ib.—bridge at Newcastle erected by, XVI. 166—bridge at Sunderland improved by, XX. 807.
- STEPNEY, in Middlesex, XX. 684.
- Steppes, in South America, II. 668, 703—in Eastern Europe, IX. 383; XVII. 610—in Russia, XIX. 515—Siberia, 548.
- Sterculiaceæ, nat. order of plants, V. 184.
- Stère, French solid measure, X. 284.
- Stereobate, in architecture, III. 513.
- Stereognathus, genus of fossil mammals, XVII. 159, 163.
- Stereographic projection, X. 489.
- Stereometer, XII. 87.
- Stereometry, Kepler's tract on, I. 554.
- Stereomonscope, XX. 689.
- STEREOSCOPE, XX. 684—invention of, XVI. 542, 543; XVII. 450; I. 925—principle of, as stated by Galen, XVI. 523—phenomena of, XIV. 574.
- STEREOTYPE, XX. 691; XVIII. 549—stereotyping of wood-cuts, 551—invention of the art, X. 444.
- Sterility, causes of, XIV. 425—of hybrids, III. 174.
- Sterlet, fish, abundance of gelatine in, III. 93.
- STERLING (John), XX. 691—Hare's life of, XI. 228.
- money, VII. 71—silver, 72—gold, ib. See Standard of Value.
- Stern of a ship, XX. 163 *et seq.*
- Sterna, genus of birds, XVI. 813.
- Sternarchus, genus of fishes, XII. 234.
- STERNBERG, Austrian town, XX. 692.
- Sternbergite, mineral, XV. 121.
- STERNE (Laurence), XX. 693, 362—Nollekens' bust of, XVI. 283—his character of Lord Bathurst, IV. 508—his novels, XIX. 274.
- STERNHOLD (Thomas), XX. 693.
- Sternoptyx, genus of fishes, XII. 248.
- Sternopygus, genus of fishes, XII. 234.
- Sternoxi, family of insects, IX. 104.
- Sternum, in man, III. 9—mammalia, 76—birds, 85—fishes, 90—insects, IX. 37.
- Steropsis, genus of insects, IX. 134.
- STESICHRUS, Greek poet, XX. 693.
- STETHOSCOPE, XX. 694; XIV. 464—invention of, XIII. 151—use of, in determining pregnancy, XIV. 426.

STE—STI

- STETTIN, in Prussia, XX. 694; XVIII. 284—wooden bridge near, VI. 383—hering trade of, IX. 640.
- STEBENVILLE, in Ohio, XX. 694.
- STEVEN (Mr), builder of a bridge in Dublin, VI. 382, n. 1.
- (Christian), his work on insects, IX. 11.
- Stevens (R. L.), his improvements in steam-boats, XX. 638—his plan to prevent smoke, 354.
- Stevenson (Alan), his Treatise on Lighthouses, I. 907—Skerryvore lighthouse erected by, ib.; XIII. 467—his description of the difficulties of that undertaking, ib., 468—on lights for lighthouses, 475, 477, 478, 479—on under currents in Cromarty Firth, XVI. 61—on the river Conon, 82.
- (David), on the force of waves, XI. 216—his work on marine surveying, XVI. 59, n. 2.
- (Messrs), their operations on the river Tay, XVI. 73; Forth, 75; Ribble, 77; Lune, ib.; Dee, 83.
- (ROBERT), XX. 694; I. 907—on the destruction of timber by the Limnoria terebrans, VII. 542; XI. 224—Bell-rock lighthouse erected by, XIII. 465, 466—his flashing and intermittent lights, 481—on the currents of the river Dee, XVI. 61, 81—sea-wall at Trinity by, XI. 220.
- (Thomas), his holophotal system of lights, XIII. 477—his catadioptric glass mirror, 478—dipping and apparent lights, ib.—his spherico-cylindric lenses, 480.
- (W. B.), his account of the Peruvians, II. 689 and n. 1.
- Stevinus, or Stevin (Simon), engineer, I. 590—discovered that the pressure of fluids is according to their depth, 596—introduced the practice of decimal fractions, 703—on hydrostatics, 708—on the resolution of forces, VIII. 335—on navigation, XVI. 3—on locks in rivers, XIX. 222.
- STEWART, XX. 695—Lord, of the royal household, XI. 774.
- Stewart (Charles), of Hillside, VIII. 237.
- (DUGALD), XX. 695; I. 402—410—his Dissertation on the progress of metaphysical and ethical philosophy, I—on beauty, IV. 540, 554—succeeded by Dr Thomas Brown, V. 684—on dreaming, III. 321, n.; VIII. 176—his account of a deaf and blind boy, VII. 688—on Locke's definitions, XIII. 601, n.—on the origin of language, 188, n.—on insanity, XIV. 526—on metaphysics, 551, 555 *et seq.*—on attention, 575—on conception and imagination, 576—on moral distinctions, 580—on volition during sleep, 583, n. 3—Mills' eulogium on, XV. 11—on Robertson's Charles V., XIX. 231—on Dr Reid, 2; Dr Robertson, 233—his character of Dr Adam Smith, XX. 344.
- (John), his rope machinery, XIX. 412.
- (MATTHEW), XX. 698; I. 698; X. 505—completed the Newtonian theory of the moon, 780; IV. 104—Playfair's Life of, XVIII. 4—on porisms, 361.
- STEWARTON, in Ayrshire, XX. 699.
- Stewing, IX. 766.
- STEYER, Austrian town, XX. 699.
- Sthenopus, genus of fishes, XII. 283.
- Stibine, mineral, XV. 119.
- Stiblite, mineral, XV. 112.
- STICCATO, XX. 699.
- Sticklac. See Lac.
- Sticklebacks, fishes, XII. 281—in salt reservoirs, XIX. 588.
- STIEGLITZ (C. Ludwig), XX. 699.
- (Dr), on animal magnetism, XX. 444.
- Stiell's Hospital, XI. 178.
- STIFEL, XX. 699; I. 707—mathematical attainments of, 558—his improvements in algebra, II. 485.
- Stiffness, in structures, XIV. 380, 383.

STI—STO

- STIGLIANO, town in Naples, XX. 699.
- STIGLMATER (J. Baptist), XX. 699.
- Stigma, in botany, V. 118, 130, 132.
- Stigmata, V. 235.
- Stigmatophora, genus of fishes, XII. 315.
- Stigmus, genus of insects, IX. 196.
- Stilaginaceæ, nat. order of plants, V. 207.
- Stilbaceæ, nat. order of plants, V. 202.
- Stilbite, mineral, XV. 76.
- Still, used in distillation, VIII. 47, 49.
- (JOHN), bishop, XX. 699—comedy by, XXI. 166.
- STILLING (J. H. Jung), XX. 699.
- STILLINGFLEET (Edward), XX. 700.
- (BENJAMIN), XX. 700.
- Stilpnomelan, mineral, XV. 79.
- Stilpnosiderite, mineral, XV. 108.
- Stilpo of Megara, XX. 700.
- Stilton cheese, VII. 625; XIII. 320.
- Stimulants, in medicine, XIX. 611.
- Sting, of the bee, IV. 573—of arachnidæ and insects, XIV. 440—of plants, V. 75. See Entomology.
- Stipend of the Scotch clergy, XVIII. 494.
- Stipules of leaves, V. 93.
- STIRLING, XX. 700—carse of, VI. 276—bridge of, IX. 796.
- (James), I. 711, n. 3—his theorem, XVIII. 617.
- (Sir James), his expedition to Japan, XII. 699.
- (Mr), of Glenbervie, on the mode of sowing grass-seeds, II. 322.
- (Dr Robert), his heat economiser, XX. 619.
- (William) of Keir, his Life of Charles V., XIX. 231, n. 2.
- STIRLINGSBIRE, XX. 702—agricultural statistics of, XIX. 796, 797, 798—population, 799.
- Stirrup, XI. 675, 685.
- Stizus, genus of insects, IX. 195.
- Stjernhjelm (George), Swedish author, XIX. 697.
- STJERNSTOLPE, Swedish author, XX. 704; XIX. 699.
- Stoa, in architecture, III. 513—Poecile, in ancient Athens, IV. 161—of Hadrian, 164.
- STOBÆUS (Joannes), XX. 704.
- Stock. See Horses, Cattle, Sheep, &c.
- in grafting, V. 168; XI. 695, 703.
- Stock-Exchange, London, XIII. 663.
- See Fund.
- Stock-fish, XII. 269; XVI. 327.
- Stockach, battle of, X. 111.
- Stockade, in fortification, IX. 799.
- STOCKHOLM, XX. 704, 861 *et seq.*; IV. 404—Academy of Sciences at, II. 66—Academy of the Fine Arts, 68—libraries, XIII. 427—early printing at, XVIII. 533—climate, XX. 861—assembly of the diet at, 865—state of crime, 866—births, ib.
- STOCKING, XX. 706—yarn, VII. 448.
- Stocking-manufacture of England, VIII. 732—Nottingham, XVI. 339—Leicestershire, XIII. 321—Derbyshire, VII. 755—Hawick, XI. 246.
- Stocking-trade, VII. 448.
- STOCKPORT, in Cheshire, XX. 706.
- STOCKS, XX. 707. See Funding System.
- as a punishment, XVIII. 575.
- STOCKTON-UPON-TEES, XX. 707; VIII. 266.
- Stodart (Mr), his mode of tempering steel, VII. 600.
- STODDART (Sir John), XX. 707.
- (T. Tod), on the destruction of unspawned salmon in the Tweed, IX. 616—his estimate of the amount of salmon ova spawned in the Tweed, ib.
- STOICS, XX. 708; I. 318—notice of the most celebrated, 319—evils which resulted from their attempts to stretch their system beyond the limits of nature, 320—their theory on the basis of morality, XV. 556—their opinions on predestination, XVIII. 477.
- Stoke, battle of, VIII. 695.
- Stoke's engraving machine, VIII. 810.
- STOKE-UPON-TRENT, XX. 708, 531.
- Stokers and stoking, XX. 648.
- Stokes (Prof. George Gabriel), I. 924—on

STO—STO

- the earth's attraction, 851—on the pendulum, 853—his definition of the index of friction, 887—on the refrangibility of light, 924—on the conduction of heat, 952—on optics, XVI. 550, 669, 694.
- Stokes (Mr), his survey of the coasts of Australia, IV. 254.
- STOLBERG (the Brothers), XX. 708.
- Stoll (Casper), his work on insects, IX. 7.
- Stolon, and stoloniferous plants, V. 79.
- STOLPE, Prussian town, XX. 708.
- Stoltzhirs, engravers, VIII. 800.
- Stolzit, mineral, XV. 106.
- Stomach, human, III. 59—digestion in, XVII. 659. See Digestion.
- of brutes, III. 108—of bees, IV. 572—insects, IX. 51—diseases of, in the domestic animals, XXI. 565, 567, 568.
- Stomach-pump, XVIII. 133.
- Stomach-staggers, a disease in cattle, XXI. 566.
- Stomapoda, crustacea, VII. 542.
- Stomata, or Stomates, of plants, V. 74.
- Stomias, genus of fishes, XII. 250.
- Stomoxidæ, family of insects, IX. 245.
- Stomoxys, genus of insects, IX. 245.
- STONE (Edmund), XX. 708.
- in the bladder. See Calculus (Urinary).
- Stone-chat, bird, XVI. 753.
- Stone-cutting, XX. 710, 725.
- Stone-flies, use of in angling, III. 149, 153.
- Stone-lilies, XVII. 98.
- STONE-MASONRY, XX. 710; V. 737; XIV. 336—materials used in, XX. 711—principles of stability and strength in, 715—foundations, 721—stone cutting, 725 artificial stones, and the induration of soft stones, 735.
- Stone-masons, XX. 710, 711—diseases of, XIV. 442.
- Stone-paving, V. 739.
- Stone-walls, measuring of, V. 740.
- Stoncrop, order of plants, V. 194.
- STONEHAVEN, XX. 708; XIII. 89.
- STONEHENGE, XX. 709; II. 665; III. 433, 434; VIII. 187; XIII. 2.
- STONEHOUSE, XX. 709; XVIII. 19.
- Stones, transmission of sound by, II. 101—building with, V. 737 *et seq.*—expansion of, by heat, XI. 268—specific gravity of various kinds of, 88—strength of, XX. 759, 758—rocking, or logan stones, VIII. 187; XV. 166; VII. 764—in construction, 323, 328—as building materials, XX. 711, 712—their durability and causes of decay, 712—strength and resistance of, 717, 759—stone period in archæology, III. 419. See Geology, Mineralogy, Limestone, Sandstone, Marble, Stone-masonry.
- Stonesfield, strata at, XVII. 158, 159—fossil insects of, 103—megalosaurus in, 640.
- Stoneware, XVIII. 430, 434.
- Stony-Middleton, in Derbyshire, tepid spring at, VII. 755.
- Stooking sheaves, II. 314.
- STORACE (Stefano), XX. 736.
- Storax, order of plants, V. 198.
- resin, V. 198.
- Storch, on the mercantile system, XVIII. 215—on political economy, 228, n. 1 *et seq.*
- Storck, Anabaptist leader, II. 742.
- Storeys, commencement of the practice of building houses in, III. 447.
- Storks, XVI. 799.
- Storm (Edward), Norwegian poet, XIX. 693.
- Stormontfield, artificial breeding of salmon at, IX. 592, 593, 595, n.; XVII. 455.
- Storms, law of, VI. 774—indicated by the barometer, IV. 458. See Meteorology, &c.
- STORNOWAY, XX. 736; XIII. 352—fisheries of, XIX. 427; IX. 640, 642.
- Storr's classification of animals, III. 183.
- STORY (Joseph), American judge, XX. 736.
- posts, XX. 779.
- STOTHARD (C. Alfred), XX. 737; XVII. 80.
- (THOMAS), painter, XX. 738.
- Stour, river, XIII. 65; VIII. 111.

STO—STR

STOURBRIDGE, XX. 738; XXI. 928—its brick clay, V. 345, 346; XIII. 721; XVIII. 439.
 STOURPORT, XX. 738.
 Stourton quarries, footprints in, XVII. 131.
 STOVE, XX. 738—plant-stove, XI. 756—stove-plants, 757—stove-grate, XVIII. 78—warming of apartments by stoves, ib.; XIX. 614—lamp stove, XIII. 172.
 Stow (John), historian, XX. 744—his Chronicle quoted, VI. 623—his Survey of London, XIII. 673; Strype's edition of, XX. 783—his notice of the ship Princess Royal, 128.
 Stowe, in Buckinghamshire, V. 722.
 Stowe-papers, XI. 59.
 Stowell (Lord). See Scott (William).
 STOWMARKET, in Suffolk, XX. 744.
 STRABANE, in Tyrone, XX. 744; VIII. 103; XXI. 408.
 STRABO, XX. 744; X. 462—in geography, 467—his account of ancient navigators, 462—on mythological fables, VII. 493—on the Cretans, 496—on Aristotle's library, XIII. 383—his description of Rome, XIX. 360—on the boundaries of Syria, XX. 901; on the provinces of, 904—on the tides, XXI. 250—on the plain of Troy, 358.
 Strachey (Edward), his translation of a Hindu treatise on algebra, II. 487.
 — (Sir Henry), on the state of India, XI. 518, 521, 522, 523.
 — (Captain R.), on the glaciers of the Himalaya, X. 634.
 STRADA (Famiano), XX. 745.
 STRADBALLY, town in Ireland, XX. 745.
 STRAFFORD (Earl of). See Wentworth (Thomas).
 STRAHAN (William), printer, XX. 745.
 Strahlstein, mineral, XV. 81.
 Strain, on timber, VI. 255, 256; on timber in roofs, XIX. 375 *et seq.*; mode of calculating, 385—strains to which a ship is liable, XX. 179—strains to which strength is opposed, 755—on building materials, 715.
 STRAIT, XX. 745; X. 483—various meanings of the word, VIII. 11.
 STRALSUND, XX. 745—trade of, XVIII. 670—siege of, in the year 1715, XX. 856.
 Stramonium. See Datura.
 Stranding of a ship, what constitutes, XII. 422.
 Strands, in rope-making, XIX. 401, 405.
 Strang (Dr), on the statistics of the factories of Lanarkshire, VII. 451—on the population of Glasgow, X. 649—on the educational statistics of Glasgow, 653.
 STRANGE (Sir Robert), engraver, XX. 746; VIII. 809.
 STRANGFORD, XX. 746.
 — (Lough), VIII. 122.
 Strangling, death from, XIV. 430.
 STRANRAER, in Wigtonshire, XX. 746; XXI. 864.
 Straps, in carpentry, VI. 265.
 STRASBURG, XX. 746—population, X. 277—early printing at, XVIII. 532—mercantile societies at, XX. 423—roof of Strasbourg railway station, Paris, XIX. 398.
 Strata, or beds, in geology, XV. 156; XVII. 586—extent and termination of, XV. 158—contemporaneity of, on same horizon, 160—interstratification, association, and alternation of, 161—lateral variation of, 162—inclination of, 168—contorsions, 169—inversion of, 170—unconformable, 182—overlapping, ib.
 Strategy, in war, XXI. 702.
 STRATFORD (Stony), XX. 747.
 Stratford-le-bow, earthenware of, XVIII. 433.
 STRATFORD-UPON-AVON, XX. 747—canal, XXI. 738.
 Strathbogie, II. 33.
 Strathclyd, kingdom of, XIX. 743, 746.
 STRATHMIGLO, in Fifeshire, XX. 747.
 Strathmore, IX. 781; XIX. 792.
 Strathnaver, XX. 840.
 Strathpeffer mineral well, XIX. 426.

STR—STR

Stratification of rocks, XV. 156, 158. See Strata.
 — in tanning, XIII. 307.
 — of the electric light, XXI. 630.
 Stratified rocks, XV. 194 *et seq.*; XVII. 586.
 Stratiomydæ, family of insects, IX. 237.
 Stratiomys, genus of insects, IX. 238.
 STRATO of Lampsacus, XX. 748.
 Stratus, cloud, XIV. 655.
 STRAUBING, in Bavaria, XX. 748.
 Straus-Durckheim, his work on the anatomy of the articulated animals, IX. 15—on the laws of organic structure, 41.
 Strauss (Dr), on Christianity, X. 616—on the impossibility of miracles, XV. 264—on myths, ib., *n.*—on the evidences of Christianity, XVII. 203.
 Straw, as manure, II. 406—bleaching of, IV. 770—plaiting of, XI. 243—used for making paper, XVII. 260.
 Straw-hats, XI. 242.
 Strawberry, V. 135, 118, 124—culture of, XI. 718.
 — tree, V. 198; XI. 748. See Arbutus.
 Stream-anchor, III. 116.
 Street's blowing machine, IV. 796.
 Streets, width and direction of, III. 494—in ancient Rome, 471—street thoroughfares of London, XIII. 679—of Peking, XVII. 369—paving of, XIX. 227.
 STREHLEN, Prussian town, XX. 748.
 Strength, muscular, improved by training, VIII. 25—instrument for measuring, 365—of men and animals, XIV. 416—principles of strength in masonry, XX. 715.
 — OF MATERIALS, XX. 748; I. 874 *et seq.*—passive, VI. 249—strength of cast iron, XII. 566; malleable, 570—in structures, XIV. 380, 383—principles which regulate, XIX. 374—transverse strength and resistance of stones, XX. 717—of timber, as the density, XXI. 279.
 Strepsidura, fossil mollusks, XVII. 110.
 Strepsilas, genus of birds, XVI. 804.
 Strepsiptera, order of insects, IX. 26, 220.
 Striata corpora, III. 54.
 Striated substances, colours of, VI. 649.
 STRICKLAND (Hugh Edwin), XX. 782.
 Stricture, in pathology, XVII. 690—of the urethra, XX. 831.
 Stridulantes, family of insects, IX. 167.
 STRIEGAU, town in Silesia, XX. 782.
 Strike among workmen, VII. 161, 163, 164, 165; XIV. 350.
 — of beds, in geology, XV. 168.
 String courses, in architecture, III. 513; V. 739.
 Stringhalt in horses, XXI. 576.
 Stringocephalus, fossil mollusks, XVII. 103.
 Strings (musical), theory of, II. 110.
 Strix, genus of birds, XVI. 746.
 Strobilus, in botany, V. 115.
 Stroganowite, mineral, XV. 73.
 Strokr, Great and Little, Iceland, XII. 201.
 Stromateus, genus of fishes, XII. 298, 293.
 Stromatopora, fossil sponges, XVII. 92.
 Strombeck (Baron Von), on animal magnetism, XX. 444.
 Strombidæ, family of mollusks, XV. 388—fossil, XVII. 109.
 STROMBOLI, XX. 782, 246; XIII. 502.
 Strombus, genus of mollusks, XV. 388.
 Stromeyer (M.), his discovery of cadmium, VI. 51.
 Stromeyerite, mineral, XV. 118.
 STROMNESS, in Orkney, XX. 782.
 Stromnite, mineral, XV. 95.
 Strömö, one of the Faroe islands, IX. 484.
 Strongbow, XII. 467; XIII. 81; VIII. 217.
 Strongylium, genus of insects, IX. 132.
 Strongyloceros, fossil deer, XVII. 171.
 Strongylus, XXI. 980—in the domestic animals, 574.
 Stronsey, one of the Orkney islands, XVI. 718, 719.
 Strontia, XV. 65—nitrate of, used to produce red fire, XVIII. 706.
 Strontianite, mineral, XV. 95.

STR—STU

Strontites, XV. 623.
 Strontium, VI. 486.
 Strophalosia, fossil mollusks, XVII. 105.
 STROPHE, in poetry, XX. 782.
 Strophioles, in botany, V. 140.
 Strophodus, genus of fossil fishes, XII. 341.
 Strophomena, fossil mollusks, XVII. 104.
 STROUD, or Stroudwater, XX. 782; X. 682.
 Structures, theory of, XIV. 380.
 STRUENSEE AND BRANDT (Counts), XX. 782; VII. 742.
 Struthio, genus of birds, XVI. 795.
 Struthium, IV. 757.
 Struts, in carpentry, V. 748; VI. 259; XIX. 383—distinguished from a tie, VI. 373.
 Strutt (Jedediah), III. 610, *n.* 1; VII. 442, 449, 755.
 — (JOSEPH), XX. 782—on English sports, XVII. 714.
 — (Joseph), his public park at Derby, VII. 753.
 Struve (F. G. Wilhelm), on double stars, I. 861; IV. 85—multiple stars, ib.—his measurement of an arc of meridian, I. 854; IX. 552—his reasoning on the Milky Way, I. 845, *n.* 3—on Sir W. Herschel's discoveries, 846, *n.* 2—his connection with the Dorpat and Pulkowa Observatories, III. 819, 820—on the constant of aberration, IV. 22—on Jupiter's satellites, 71—on Saturn's ring, 72—on Jupiter, 91—his catalogue of stars, 95—on the parallax of a star, 96.
 — (Otto), astronomical observations made by, I. 861—on the solar motion, IV. 87—on Saturn, 92.
 Struvite, mineral, XV. 96.
 Struyck (Nicolaas), on the population of Holland, XV. 602, 662.
 Strychnia, a poisonous alkaloid, XIV. 438; XVI. 396; XVIII. 128, 130.
 — order of plants, V. 199.
 Strychnine, effects of, on the spine, XVII. 702.
 Strychnos nux vomica, V. 200; XIV. 438.
 STRYPE (John), XX. 782.
 Strzlecki (Count), his explorations in the interior of Australia, IV. 256—on the native women of Australia, 260.
 Stuard's patent anchor, III. 118.
 Stuart (Arabella), V. 384.
 — (GILBERT), XX. 783—on the feudal system, IX. 520, 522—his attack on Henry's History of England, XI. 215.
 — (GILBERT CHARLES), painter, XX. 784.
 — (JAMES), XX. 784—his Antiquities of Athens, III. 456—on the Tower of the Winds, VII. 774.
 — (General Sir John), V. 602.
 — (Mr), on the effect of an allowance to the poor, XVIII. 310, *n.* 1.
 STUARTS (The), XX. 783. See Scotland and Great Britain.
 Stub (Ambrosius), Danish poet, XIX. 693.
 Stubbs on hats, XI. 240.
 Stubner, Anabaptist leader, II. 742.
 Stucco, V. 742—plastering of walls with, 744—decay of, on walls, ib.—stucco work of the ancients, XIX. 844.
 Stud of race horses, XI. 644—general stud-book, 645.
 Students, in universities, XXI. 445 *et seq.*
 Stuff hats, XI. 240.
 STUHLWEISENBURG, in Hungary, XX. 784.
 STUKELEY (William), XX. 784.
 Sturdy, in sheep, XXI. 575.
 Sture (Steen), XX. 846.
 Sturgeon, fish, XII. 317—as an article of food, IX. 763—pyloric appendages, III. 111, 112—isinglass from, XII. 628. See Caviare.
 Sturionidæ, family of fishes, XII. 317.
 Sturionii, fossil fishes, XVII. 125.
 STURM (J. C. François), XX. 784.
 — (Jacques), his works on insects, IX. 10, 24.
 — (JOHANN), or Sturmianus, XX. 784.
 Sturnus, genus of birds, XVI. 763.
 Sturt (Captain), his explorations in Australia, IV. 255, 256.

STU—SUC

Stuttering, XX. 534—distinguished from stammering, 533.
 STUTTGART, in Württemberg, XX. 785—library of, XIII. 421.
 Styca, Anglo-Saxon coin, VII. 71.
 Stygia, genus of insects, IX. 212, 233.
 Style, in architecture, III. 513—in botany, V. 118, 130, 132—in joinery, 751, 752—in design, XVII. 65.
 — in language, Addison's, I. 162—his definition of fine writing, ib.—principles of prose style, XIX. 140, 129.
 Stylephorus, genus of fishes, XII. 303.
 STYLES, in chronology, XX. 785—old and new, VI. 89, 668; I. 529.
 Stylewort, order of plants, V. 197.
 Stylidiaceæ, nat. order of plants, V. 197.
 Stylina, genus of mollusks, XV. 384.
 — fossil corals, XVII. 97.
 STYLITES (Simeon), XX. 785.
 Stylobate, in architecture, III. 513—Doric, 463—Ionic, 465, 475—Corinthian, 466, 473.
 Stylophorinæ, zoophytes, XXI. 1005.
 Stylops, genus of insects, IX. 220.
 Stylus, use of in ancient painting, XVII. 51.
 Styracaceæ, nat. order of plants, V. 198.
 STYRIA (Duchy of), XX. 785; IV. 311, 309—scenery of, 312.
 STYX, XX. 785.
 Suabia, in Bavaria, chief towns of, IV. 518. See Swabia.
 Suabian dynasty, XX. 257, 263.
 SUAKIN, in Nubia, XX. 786—trade of, XVIII. 819.
 Suard (M.), his character of Corneille, I. 135, *n.* 3.
 SUAREZ (Francis), Jesuit, XX. 786—on the will of God as a rule of conscience, XV. 550.
 Sub-genus, V. 175.
 Subalternation, in logic, XIII. 604.
 Subclavian artery, III. 65.
 SUBIACO, Italian town, XX. 786—early printing at, XVIII. 532.
 Subjective and objective, explanation of these terms, XIV. 560, *n.*—subject and subjective, XVI. 401.
 Subjects, their duty to the State, XV. 570.
 Subjunctive mood, X. 766, 790.
 Sublapsarians, XVIII. 478.
 Sublimity, IV. 553.
 Subordinaries, in heraldry, XI. 329.
 SUBPENA, XX. 786.
 Subsoil, II. 398; XV. 216—analyses of, II. 393, 400. See Soil.
 Subsoil-ploughing, II. 400—plough, 271.
 Substance, mistaken application of the word, I. 242. See Matter.
 Substantive noun, X. 746, 789.
 Substitution, in chemistry, VI. 504.
 Subterraneous irrigation, XII. 618.
 Subtraction, in arithmetic, III. 584—of vulgar fractions, 598—of decimals, 600, 602, 603—in algebra, II. 490, 494.
 Subulicorne, family of insects, IX. 175.
 Subulipalpi, family of insects, IX. 100.
 Succadana, in Borneo, V. 47.
 Succession, French law of, VII. 432—war of the Spanish, IV. 303; V. 448; XII. 652; of the Roman (A.D. 68), XIX. 338 (see Primogeniture)—duties on successions, XXI. 65, 66.
 Succinea, genus of mollusks, XV. 373.
 Succinite, mineral, XV. 124.
 Succory, culture of, XI. 744. See Chicory.
 SUCHET (General), XX. 786; X. 118, 139 *et seq.*—his Spanish campaign, V. 613; XXI. 825, 826.
 SU-CHEW, Chinese city, XX. 786.
 Suchosaurus, genus of fossil reptiles, XVII. 152.
 Suck, river, X. 389.
 Suckers, sub-order of fishes, XII. 227.
 — of insects, IX. 34, 35.
 — of plants, V. 79—propagation by, XI. 694.
 Sucking, operation of, XVIII. 76.
 Sucking-fish, XII. 270. See Echeneis.
 Sucking-pump, XII. 174.
 SUCKLING (Sir John), XX. 786—character of his poetry, XVIII. 122.

SUC—SUL

Sucre (General), IV. 833, 836; XVII. 468.
 Suctoria, order of insects, IX. 26, 260.
 SUDBURY, in Suffolk, XX. 786, 790, 791.
 Sudebnik, code of Russian laws, XIX. 475.
 Sudermania (Duke of), revolution in Sweden in favour of, XX. 859.
 Sudetic mountains, IX. 382; XX. 274.
 Sudras, Hindu caste, VI. 318; XI. 471.
 SUE (Eugène), novelist, XX. 787.
 SUTONIUS (C. Tranquillus), XX. 787.
 — (Paulinus), V. 378.
 SUEUR (Le), painter, XX. 788; XVII. 76.
 SUEVI, XX. 788; X. 572—their irruption into Spain, XX. 459.
 SUEZ, Egyptian seaport, XX. 789; VIII. 424; XVIII. 818—shipping of, XXI. 385.
 — (GULF OF), XX. 789; XVIII. 817, 818.
 — (ISTHMUS OF), XX. 789—railway and proposed canals across, VIII. 430.
 SUFFED KOH, mountain range, XX. 790.
 Suffocation, VIII. 181; XIV. 430.
 SUFFOLK, XX. 790—drill, II. 274—punch, 338—duns, 342—population and value of property, VIII. 754.
 — in Massachusetts, XIV. 342.
 Sufis and Sufism, XV. 756.
 SUGAR, XX. 791; V. 73; VI. 515, 516; VIII. 47; XIX. 611—of Bengal, IV. 649—Bourbon, V. 248—Brazil, 294—France, X. 248, 256—Hindustan, XI. 453—Guiana, 82—Mauritius, XIV. 363—Mexico, 717—sugar estates in Jamaica, XII. 680—production of, in West Indies, since the abolition of slavery, XX. 327—imports of, from India, XI. 462—grape sugar, II. 380; V. 320; VI. 516; VIII. 47; IX. 756; XXI. 889—cane sugar, II. 380; V. 216; VI. 516; IX. 756—manna sugar, VIII. 47—liquorice, ib.—beet-root sugar, II. 334—maple-sugar, quantity produced in Canada, VI. 142, 147—sugar of milk, XV. 11; IX. 756—sugar-yielding vegetables, 759—ants fond of, IV. 263—in wheat, 379—in barley flour, V. 320—in malt, 324—as a substitute for barley malt in brewing, 336—effects of feeding a dog solely on, VIII. 18—its nutritious qualities, 20—its use in curing gravel, 24; and in preserving food, IX. 767—the source of ardent spirits, VIII. 47—optical properties of, XVI. 681—Mr Howard's process of boiling in vacuo, XX. 556—duties on, in France, XXI. 72—sugar-factories in Prussia, XVIII. 665, 666, 669—in Belgium, IV. 625. See Sugar-cane.
 Sugar-ant, III. 261, 263—means of destroying, 266.
 Sugar-candy, VI. 172; XX. 791, 795, 796, 797.
 Sugar-cane, V. 216; IX. 759—often injured by ants, III. 264—in Jamaica, XII. 682—Louisiana, XIII. 700—Nicaragua, XVI. 244. See Sugar.
 Sugden (Mr), See Leonards (St Lord).
 Suggestion, its meaning as employed by Reid and Berkeley, I. 167—and by Dr T. Brown, 416—law of, XIX. 115. See Association of Ideas.
 SUHARUNPORE, in India, XX. 799.
 SUHL, Prussian town, XX. 799.
 SUHM (Peter F. von), Danish author, XX. 799.
 SUICIDE, XX. 799—common among the North American women, II. 681—no crime with the Chinese, VI. 595—in Japan, XII. 693—Prussia, XVIII. 664—Socrates' opinion of, XX. 393—suicidal mania, XIV. 532.
 SUIDAS, Greek lexicographer, XX. 801—Küster's edition of, XIII. 137.
 Suir, Irish river, XIII. 84; XVIII. 728.
 Suit, or action, in law, II. 119.
 Sujah Dowlah, XI. 487, 488.
 Sula, genus of birds, XVI. 814.
 Sulina mouth of the Danube, VII. 654.
 Sullotes, II. 442; XI. 23, 24.
 Sulitelma, mountain, XIII. 95, 234; XVI. 320; XVII. 643.
 SULLA, Roman dictator, XX. 801; XIX.

SUL—SUN

321; VI. 222; XIV. 306; XV. 284—an apparition seen by, III. 310—his engagement with Archelaus, 685—capture of Athens by, IV. 172—support given to, by Pompey, XVIII. 288.
 Sullivan (Dr), on peat, XVII. 358.
 SULLY (Maximilien De Bethune, Duke of), XX. 801—anecdote of, IV. 528—on the expense of collecting the revenue in France, XXI. 42.
 SULMONA, town of Naples, XX. 801.
 Sulphate of copper, used for preserving timber, XX. 167.
 — of lime, II. 304. See Gypsum.
 — of magnesia, as manure, II. 413.
 Sulphated urine, II. 407.
 SULPHUR, XX. 801; VI. 474—combined with oxygen, 475; with hydrogen, chlorine, and carbon, 477—localities where it occurs, XVII. 624—in mineralogy, XV. 64, 122—in pyrites, 246—sulphur-salts, 62—proportions of, in gunpowder, XI. 151—specific gravity of, XII. 88—in Japan, 689; Sicily, XX. 247—on the shores of the Dead Sea, III. 761—sulphur-caves, in Arabia, 357—effects of, in coal gas, XIX. 616—duty on, XXI. 60.
 Sulphureous springs, in Derbyshire, VII. 755.
 Sulphurets, VI. 474, 483, 484—of barium, 486—antimony, 494—arsenic, 495—bismuth, 496—copper, 497—silver, 498—iron, 439, 490—lead, 497—magnesium, 487—potassium, 485—strontium, 487—sodium, 486—tin, 493—zinc, 491—alkaline, their poisonous qualities, XIV. 434. See Chemistry.
 Sulphuretted hydrogen, found in the atmosphere, II. 376—poisonous quality of, XIV. 436; XVIII. 135—springs impregnated with, XVII. 602.
 — metals, XV. 114.
 Sulphuric acid, VI. 475—in plants, II. 388—employed in bleaching, IV. 758—as an absorbent, VII. 105—its poisonous qualities, XIV. 435—Dr Roebuck's manufacture of, XIX. 244.
 — ether, as an anæsthetic, VI. 631.
 Sulphuring of wool, IV. 769.
 Sulphurous acid, VI. 475—poisonous quality of, XIV. 43; XVIII. 135—specific gravity of, XII. 89—in the smoke of London, XX. 712.
 Sulpicia, Roman poetess, XX. 801.
 SULPICIUS (Severus), XX. 801—his connection with Vigilantius, XXI. 587.
 Sultanas, Turkish raisins, XVIII. 799.
 Sultānpūr, in Oude, XVII. 17.
 Sultans of Turkey, XXI. 376.
 SULZER (Johann Georg), XX. 802.
 — (Mr), his experiments on the elasticity of air, XVIII. 53.
 — (John Henry), his work on insects, IX. 5.
 Sumach, Venetian, V. 190—a brown dye-stuff, VIII. 307—used in tanning, XIII. 306.
 SUMAROKOV, XX. 802; XIX. 547.
 SUMATRA, XX. 802—cannibalism in, III. 270—edible birds' nests in, IV. 727—fillgree manufactures, IX. 579—language, XIII. 207—volcanoes, XVII. 589—height of mountains, 645, 646—reptiles, XIX. 50, 53, 54, 63, 72, 73—variation of the needle, XIV. 54.
 Sumatra-camphor order of plants, V. 185.
 SUMBAWA, East Indian island, XX. 806—volcanoes, XVII. 589.
 SUMBULPORE, in Bengal, XX. 807.
 SUMMER, XX. 807.
 Summer-lightning, VIII. 587.
 SUMPTUARY LAWS, XX. 807.
 SUN, XX. 807; IV. 11, 86; I. 841—dependence of magnetic periods on, 996—motions of, IV. 4—oval appearance of, in the horizon, 10—its apparent circular motion in the ecliptic, 11—its orbit, 15—its diameter, 16—variation of its motion, ib.—describes areas proportional to the times, ib.—eccentricity of its orbit, 18—equation of the centre, ib.—secular diminution of the eccentricity

SUN—SUR

of its orbit, 19—determination of its place in its orbit, ib.—its parallax, distance, and volume, 20—spots, 25, 28, 29, 88—rotation, ib.—constitution and physical peculiarities of surface, 25, 30, 87, 88—position of its axis, 27—supposed atmosphere, 30, 179—eclipses of, 47—transits of Venus and Mercury over its disk, 62—force by which it disturbs the motion of the moon round the earth, 102—to find how much its rising is advanced by refraction, 112—its mean motion, 127—equation of its centre for 1801, 128—its declination for 1801, 132—elements for the projection of its eclipses, 138—heat of its rays, VI. 2, 775 *et seq.*—quantity of light received from it in different latitudes, 766—its obliquity a source of cold, VII. 100; XIV. 637—tables of its longitude and declination for every day in the year, &c., 797—electricity of its rays, VIII. 567—properties of its rays, XIII. 452—magnetism of its rays, XIV. 12—magnetic influence of, 66; XVI. 595—as a source of heat, XIV. 637—method of measuring the direct heating-power of its rays, 638—bands of light passing through, 681—coronæ and halos round the, ib., 682 (see Corona)—to take its altitude, XVI. 32, 33—to reduce its declination, 36—influence of, on the tides, XVII. 580—effect of its heat on the earth, I. 950—total quantity received by the earth from, ib.—solar year, VI. 76—solar cycle, 80—mock-sun (see Halo, Parhelia, Corona). See Light, Optics, Spectrum, &c.
 Sun Fire Office, XII. 417.
 Sun-fish, XII. 322; IX. 634. See Basking Shark.
 Sun-worshippers, their rule in Egypt, VIII. 461.
 SUNDAS, people, XII. 702, 709—language, 707.
 Sunday, I. 502, *n.*—institution of, XIX. 562—origin of the name, I. 458, *n.*; VI. 75. See Sabbath.
 — schools, in England, VIII. 746, 747; for adults, 747—in Manchester and Salford, XIV. 257—in Scotland, XIX. 803.
 Sunderbunds, in Bengal, IV. 648, 651; X. 400; XI. 449.
 SUNDERLAND, XX. 807—iron bridge at, III. 414—docks, VIII. 75—coal trade of, 266.— (Earl of), V. 436.
 Sundew, order of plants, V. 183.
 SUNIUM, XX. 808. See Colonna (Cape).
 Sunnhemp, XI. 311.
 Sunstone, XV. 71.
 Supercargo, II. 236.
 Superficies, X. 506, 507.
 Superheating of steam, XX. 647—apparatus for, 650—condenses freely, 655.
 SUPERIOR (Lake), XX. 808; VI. 138; XVII. 605.
 SUPERLATIVE, in grammar, XX. 808; X. 775.
 Superphosphate of lime, as manure, II. 264—mode of preparing it, 299—from fossil bones, 300—from the remains of cetacea, XVII. 166—analyses of, II. 411.
 Superstition, monomania of, XIV. 533—its connection with infidelity, XX. 382.
 Sûphis I. and II., Egyptian kings, VIII. 454.
 SUPPER, XX. 808.
 — (The Lord's), I. 511—not a fresh sacrifice, but the celebration of one already made, 512—how regarded by Quakers, XVIII. 716—the real presence in, 821—use of leavened or unleavened bread, I. 525. See Eucharist.
 Supporters, in heraldry, XI. 338.
 Suppuration, in wounds, XX. 823.
 Supralapsarians, XVIII. 478.
 SURAT, in India, XX. 808; XI. 92.
 Surbase, in architecture, III. 513.
 Surcoat, in heraldry, XI. 321.
 Surds, in algebra, II. 499.
 Surenas, XVII. 311.
 Surf of the sea, XVII. 582.

SUR—SUT

Surfaces, X. 506, 507—equations to surfaces of the second degree deduced from their properties, 558—tangent planes and normals to, 560—on the curvature of, 561—generation of, by the motion of lines, 562—cylindrical, conical, and conoidal, ib., 563—of revolution, ib.—of simple and double curvature, VII. 59, 62.
 Surgeon, qualities necessary in a, XX. 821—in the navy, XVI. 102, 112, 114—London College of Surgeons, VII. 114; XIII. 672—Edinburgh College of Surgeons, VII. 114; VIII. 400—barber-surgeons, IV. 432—Paris College of Surgeons, foundation of, XX. 816.
 SURGERY, XX. 809; XIV. 448, 449, 461—academies of, II. 62—application of anatomy to, 766—use of chloroform in, VI. 628—knowledge of, in ancient Egypt, VIII. 442—its province defined, XIV. 449—included in physic, 448—sub-divisions of, 463—in Ireland, VIII. 223.
 Surgical instruments, manufacture of, VII. 601; XX. 96.
 Surikate, in zoology, XIV. 167.
 SURINAM, river, XX. 835; XI. 84.
 — or Dutch Guiana, XI. 84—toad, XVII. 634; XIX. 81—serpents, 72.
 Surmullet, family of fishes, XII. 278.
 Surnames, the most common in England and Wales, XVIII. 836.
 SURPLICE, XX. 835.
 SURREY, English county, XX. 835—population and value of property, VIII. 754.— (Earl of), his translation of part of the *Æneid*, VIII. 119—poetry of, XVIII. 121.
 Surtees (Dr W. E.), on Lord Eldon and Lord Stowell, XIX. 813, 825, 826.
 Survey, trigonometrical, IX. 551—of Great Britain, XXI. 330.
 SURVEYING, XX. 838; XXI. 346.
 Surville (Capt.), his visit to Solomon's Islands, IV. 265; and to New Zealand, 266.
 SURVIVORSHIP, XX. 838—presumptions of, XIV. 426. See Annuities, Mortality.
 Surya Siddhanta, Hindu work on trigonometry, X. 503.
 Sus, genus of mammalia, XIV. 197.
 SUSA, ancient Persian city, XX. 838—taken by Alexander, XIII. 768—his residence there, 771.— in Sardinia, XX. 838.— seaport in Tunis, XX. 838.
 Susannite, mineral, XV. 105.
 Susarion, the Greek drama improved by, VIII. 134*.
 Suse, territory of, XV. 595.
 SUSPENSION-BRIDGE, XX. 838. See Bridge (Suspension).
 Suspicion, monomania of, XIV. 533.
 Susquehannah, river, XIV. 330; XVII. 395, 647.
 SUSSEX, XX. 838—population, and value of property, VIII. 754—superiority of its oak trees, XXI. 268.
 Süssmilch on mortality, XV. 601, 633—on the diminution of marriages, XVIII. 348.
 Sustentation Fund of the Free Church, XVIII. 495.
 SUTHERLAND, XX. 840—physical geography of, XIX. 794—agricultural statistics, 796, 797, 798—population, 799—salmon fishery, IX. 592, 596, 597, 598, 610—sheep farming in, II. 350.— (Dukes of), their improvements in Sutherlandshire, XX. 842.— (Mr), on the herring fishery of Dunbar, IX. 635, *n.* 2.
 SUTLEJ, or Sutluj, river, XX. 843; XVI. 687, 688—origin of, XIV. 269—valley of the, XI. 441, 448—climate of, 450.
 Suttee, no sanction for, in the Vêdas, XVII. 541.
 Sutton (Charles Manners), elected speaker of the House of Commons, V. 622—his re-election, 663—his retirement from the office, 664.— COLDFIELD, XX. 843.

SUT—SWE

Sutures of bones, II. 830—of the skull, III. 27, 29—frontal, 16—sagittal and coronal, 19—in the mammalia, 77—in birds, 85—in botany, V. 128.
 Suwaroff, (Field-Marshal), X. 111 *et seq.*; XIX. 489—his Italian campaign, III. 649; V. 567.
 Suwarrow-nut order of plants, V. 186.
 Svanberg's measurement of an arc of meridian, IX. 551.
 SVEABORG, or Sweaborg, in Finland, XX. 843—bombardment of, by the British in 1855; XIX. 511; IX. 831.
 Sviatopolk, XIX. 471.
 Sviatoslav, king of Russia, XIX. 470.
 SWABIA, XX. 843—dialect, X. 587—origin of the name, XX. 789. See Suabia and Suabian.
 SWAFFHAM, in Norfolk, XX. 843.
 Swainson (William), his works on insects, IX. 14—on the classification of the mammalia, XIV. 132, n. 1—on birds, XVI. 732, 823—on a genus of entozoa, XXI. 973—on the boas of South America, XIX. 61, n. 3.
 Swalbacius (J. G.), on birds, XVI. 725.
 Swallow (Mr), his improvements in rope-making, XIX. 414.
 Swallows, XVI. 757, 758—hibernation of, III. 181; XII. 62—edible swallow's nests, IV. 727; in Ceylon, VI. 394; Java, XII. 710.
 SWAMMERDAM (John), XX. 844—his anatomical researches, II. 763—on ants, III. 261—on bees, IV. 571 *et seq.*—his works on insects, IX. 3—his arrangement of the articulata, ib.—on the metamorphoses of insects, 54.
 Swan, XVI. 815—age attained by, II. 234—black swan, IV. 261.
 — (Joseph), his plates of the brain, III. 74.
 — River Settlement, IV. 254, 298.
 Swan-pan, Chinese computing table, II. 8.
 Swan's variation compass, XIV. 80.
 SWANAGE, in Dorsetshire, XX. 844.
 SWANEVELT (Hermann Van), painter, XX. 844.
 Swanlinbar, in Cavan, VI. 348.
 SWANSEA, XX. 844; X. 642—branch of Bank of England at, XV. 470.
 — valley railway, XX. 845.
 Swarming of ants, III. 265—of bees, IV. 581.
 SWARTZ (Olof), botanist, XX. 845.
 Swayne (Rev. G.), on the culture of the fig, XI. 708.
 Swealand, or Sweden proper, XX. 864.
 Swearing, love of, VIII. 249.
 Sweating sickness, VIII. 694; XIII. 659.
 SWEDEN, XX. 845; IX. 402—Royal Swedish Academy, II. 66—Academy of Fine Arts, 68—alum works, 637, 640—Swedish skull, III. 29—army, and martial qualities of the Swedes, 650—balance, IV. 386—elevation of its coasts, 403—Sir John Moore's expedition to, V. 603—colonies, VII. 149—union with Denmark and Norway, 739; XVI. 317—union with Norway, 318—wars with Denmark, VII. 741—ballads of, IV. 397—Bibles, 702—iron ores of, VI. 178; XII. 541—trade with England, VIII. 741; with France, X. 259—insects, IX. 65—Jews in, XII. 783—language, XIII. 211—libraries, 427—gradual elevation of the land, XV. 167—silver mines, 236—copper mines, 239; XVII. 621—lead, XV. 242—metallic produce, 248—coins, 442, 445; XVI. 389—population and mortality, 603, 605, 606, 627 *et seq.*, 638, 646 *et seq.*; XVIII. 350—monarchy, XV. 414—vaccination begun in, 639—newspapers, XVI. 202—birds, 730—the Reformation, XVIII. 827—postal system, 424—roads, XIX. 229—wars with Russia, 475 *et seq.*; V. 530—modern literature, XIX. 696—French school, 699—new school, ib.—romance and novel writers of, 701—reptiles, 15, 52—large Swedish ship in the sixteenth century, XX. 126—navy, 138—bear-hunting, 211—capercaillie-shooting, 226—stoves, 739, 740—Telford's

SWE—SWO

engineering survey, XXI. 145—universities, 492—weights and measures, 813—map of, XX. Plate.
 SWEDENBORG (Emanuel), XX. 867—his theosophic mysticism, XV. 758.
 SWEDENBORGIANS, XX. 868.
 Swediaur (Dr), on ambergris, II. 657.
 Swedish Lapland, XIII. 234.
 Swedish-turnip, XI. 740—sowing of, II. 317. See Turnip.
 SWEERTS (Jacques Thierry), general, XX. 869.
 Sweet-bay, plant, V. 204; XI. 748.
 Sweet-flag, order of plants, V. 214.
 Sweetsop, plant, V. 181.
 Sweno, king of Denmark, his treaty with Malcolm, XIX. 745.
 Sweno's stone, near Forres, XV. 577.
 Swerker, king of Sweden, XX. 845.
 Sweyn, king of Denmark, his inroads on Britain, VIII. 661.
 SWIETAN (Gerard Van), physician, XX. 869.
 SWIFT (Jonathan, D.D.), XX. 869—possible source of his idea of Gulliver's voyage to Laputa, II. 168—his Meditation upon a Broomstick, V. 258—perhaps derived hints from Aristophanes, VIII. 139—his monument, 221—his Drapier's Letters, XII. 493, 527—his Examiner, XVI. 183—on the effects of the newspaper stamp, 184—his poetry, XVIII. 124—his intercourse with Pope, 332—Sterne's imitation of, XX. 693—his letter to Lord Carteret regarding Bishop Berkeley, IV. 674—his abuse of Vanbrugh, XXI. 518.
 — bird, XVI. 758.
 Swilly (Loch), VIII. 105.
 SWIMMING, XX. 873—air-jacket, II. 430—cork-jacket, VII. 369; XIII. 440—India-rubber belts for, ib.—utility of the art, 439—repulsion the cause of some bodies swimming in fluids specifically lighter than themselves, XX. 753.
 Swimming-birds, XVII. 634. See Palmipedes.
 Swinburne (Mr), his account of the Alhambra, II. 577; and of the Moffeta, 732—on the fountain Arethusa, III. 522.
 Swinden (Van), on magnetism, XIV. 6, 14.
 SWINDON, in Wiltshire, XX. 881.
 Swine, XIV. 197—in Dumfriesshire, VIII. 238—in Scotland, XIX. 798. See Hog.
 SWINEMÜNDE, Prussian town, XX. 881.
 SWINESHEAD, town in Lincolnshire, XX. 881.
 SWINFORD REGIS, in Staffordshire, XX. 881.
 Swing-bridges, XVI. 79.
 Swing-plough, II. 270, 271.
 Swinton (Sir John), VI. 116.
 Switches, on railways, XVIII. 776, 768.
 SWITZERLAND, XX. 881; IX. 400—trout of the lakes of, III. 157, 158; XII. 242—salmon in the rivers of, 238—conquered by the French, V. 563; X. 108—its importance to them, V. 567—disadvantage of its situation for cotton manufacture, VII. 459—French trade with, X. 259 and n.—Swiss Confederation, IX. 498—condition of the Jews in, XII. 782, 783—libraries, XIII. 424—variation of the needle, XIV. 54—cretinism in, 539—coins, XV. 242, 445; XVI. 389—miocene rocks of, XV. 214—glaciers, X. 633—heights of mountains, XVII. 642, 643—lakes, 591—increase of population, XVIII. 348—postal system, 424—Presbyterianism, 486—railway statistics, 787—the Reformation, 821—Ranz des Vaches, 806—savings-banks, XIX. 678—silk manufacture, XX. 278, 279—French policy towards, in 1847, X. 230—metallic produce of, XV. 248—universities, XXI. 492—weights and measures, 813—wines of, 886—map of, XX. Plate. See Alps.
 Swooning-fits of animals, XXI. 574.
 Sword, IX. 501, 502—Roman, III. 632—ceremony with, on the creation of a knight, XIII. 112—manufacture of, at Toledo, XXI. 302.

SWO—SYM

Sword-fish, XII. 293, 295, 297—mode of fishing for, XX. 246.
 SWORDS, town in Ireland, XX. 891.
 SYBARIS, ancient city, XX. 891—coins of, XVI. 363.
 Sybines, genus of insects, IX. 140.
 Sybistroma, genus of insects, IX. 243.
 Sycamore tree, XVII. 759, 761, V. 186—embryo of, 167—Egyptian, IX. 536—wood of, XXI. 278.
 Syconus, in botany, V. 139.
 SYDENHAM (Floyer), translator of Plato, XX. 895.
 — village in Kent, XX. 891.
 — (Lord), on Canada, VI. 134.
 — (THOMAS), XX. 892; XIV. 460—Locke's commendation of his work on Acute Diseases, I. 101—Dr John Gregory's remarks on, ib., n. 2.
 SYDNEY, in New South Wales, XX. 895; IV. 271 *et seq.*—Sydney Cove, 271—climate, 279—college, 283—newspapers, ib.
 SYENE, in Egypt, XX. 897—antiquities at, VIII. 514.
 Syenite, XV. 137—soils from, II. 390.
 Syennesis of Cyprus, II. 749.
 Syepoorite, mineral, XV. 116.
 Sykes (Colonel), on a fog-rainbow, XIV. 680.
 SYLBURG (Friedrich), XX. 897.
 Sylla (Lucius Cornelius). See Sulla.
 Syllis, genus of annelides, XI. 298.
 SYLLOGISM, XX. 897; XIV. 593—Kant on, ib., n. 2—doctrine of, XIII. 607—form of, ib.—figure and mood of, 608—first syllogistic figure, ib.—canons of, 610, 611, 627, 628—breaches of the six syllogistic rules, 612, n.—reduction of, 614, 616, 617; uses of, 627—analysed in extension and comprehension, 618—functions of, 623—hypothetical and disjunctive, 631, 632—Aristotle on, III. 553, 554.
 Sylvanus, VII. 304.
 — genus of insects, IX. 142.
 SILVESTER (Joshua), poet, XX. 897.
 — II., on arithmetic, III. 581.
 Sylvester's rope-machine, XIX. 406—method of protecting the surface of building-stone, XX. 735—mode of heating rooms, 743.
 Sylvia, genus of birds, XVI. 755.
 Sylvian, mineral, XV. 97.
 Sylvius (Jacobus), anatomist, II. 757.
 Symbols, chemical, VI. 451—botanical, V. 176.
 Syme (Mr), his mode of operating for stricture, XX. 832.
 Symes on the natives of the Andaman islands, III. 124.
 Symington (Dr), on the Atonement, XXI. 213.
 Symington's steam-boats, I. 869; XX. 637, 638.
 SYMMACHUS (Quintus Aurelius), XX. 898; II. 663—orations of, XVII. 211.
 — his Greek version of the Scriptures, IV. 700; XIX. 840.
 Symmer (R.), on electricity, VIII. 528.
 Symmetry, violation of the law of, in animals, III. 91.
 — in flowers, V. 117, 119, 120.
 Symnel (Lambert), VIII. 695.
 Symonds (Capt. T. E.), on Irish fisheries, IX. 632.
 — (Mr), on the mechanics of law-making, XIII. 271, 273.
 — (Sir WILLIAM), XX. 898—his improvements in the navy, XVI. 98; XX. 134, 135, 137.
 Sympathetic ink, VII. 545; XII. 384.
 — nerve, great, III. 58—functions of the sympathetic nerves, XVII. 675.
 Sympathy, Adam Smith's theory regarding, I. 375, 376; XV. 545; XX. 339—whether an incentive to virtue, XV. 564.
 SYMPHONY, XX. 898.
 Sympiezometer, IV. 458.
 Symplectite, mineral, XV. 102.
 Symplocaceae, nat. order of plants, V. 198.
 Sympterygia, genus of fishes, XII. 327.

SYM—SZE

Symptom, argument from, XIX. 123.
 SYNÆRESIS, XX. 898.
 SYNAGOGUE, XX. 898; XII. 768—synagogues converted into churches in apostolical times, I. 490, 491.
 Synagris, genus of insects, IX. 197.
 Synallaxis, genus of birds, XVI. 768.
 SYNALPHEA, in grammar, XX. 898.
 Synanceia, genus of fishes, XII. 283.
 Synapha, genus of insects, IX. 228.
 Synaptidae, echinoderms, XXI. 986.
 Synbranchidae, family of fishes, XII. 231.
 Synbranchus, genus of fishes, XII. 231.
 Syncellus, Byzantine author, VIII. 452.
 Syncope, XVII. 701—death by, 702.
 Syndosmya, genus of mollusks, XV. 350—fossil, XVII. 108.
 Synecdoche, in rhetoric, XIX. 134.
 Synesius, his admiration of Hypatia, XII. 190.
 Syntheres, genus of mammalia, XIV. 187.
 Synetrita, genus of insects, IX. 142.
 Syngnatha, myriapods, XV. 749.
 Syngnathidae, family of fishes, XII. 315.
 Syngnathus, genus of fishes, XII. 315—fossil, 338.
 Synod, Scotch, XVIII. 493—of United Original Seceders, 502—Reformed Presbyterian of Ireland, XII. 532.
 Synodendron, genus of insects, IX. 128.
 Synodic month, IV. 38.
 Synodontis, genus of fishes, XII. 258, 259, 262.
 Synovial membrane, II. 840—affections of, XXI. 559.
 SYNTAX, in grammar, XX. 898; X. 744.
 SYNTHESIS, XX. 898.
 Syntomis, genus of insects, IX. 210.
 Syntomium, genus of insects, IX. 210.
 Syphax, XIV. 334; XVI. 350.
 Syphilis, poem of Fracastorio on, IX. 860.
 Syphon, XII. 69, 82; XVIII. 49, 50—oscillations of water in, XII. 162; XIX. 194.
 — fountain, XVIII. 49—barometer, IV. 450.
 Syphostoma, genus of annelides, XI. 296.
 Syr Daria, river, XII. 711.
 SYRA, Greek island, XX. 898.
 SYRACUSE, XX. 899, 244—besieged by the Carthaginians, VI. 283, 285—taken by the Romans, XIX. 311—coins of, XVI. 366, 367.
 SYRIA, XX. 901; III. 734; VIII. 470, 477, 478, 479—great part subjugated by Saladin, 480—revolt in, 482, 484—El-Mueiyad Sheikh's campaigns in, 486—ceded to Mohammad 'Alee in 1833, 495—Druses of, 197—conquered by Timur, XXI. 283—Syrian months, VI. 671—coins of, XVI. 378—deserts of, XVII. 614—earthquakes, 616—height of mountains, 644—abundance of lizards in, XIX. 27—branch of the Caucasian race of man, II. 775. See Palestine.
 Syriac alphabet, II. 614—Bibles, IV. 700; XIX. 839—language, XIII. 209.
 Syringa, order of plants, V. 192—genus of plants, XVII. 764.
 Syringe, XVIII. 30 *et seq.*
 Syringopora, fossil corals, XVII. 97.
 Syrmia, XX. 327.
 Sturnium, genus of birds, XVI. 746.
 Syrphici, family of insects, IX. 238.
 Syrphus, genus of insects, IX. 240.
 Syrrhaptus, genus of birds, XVI. 792.
 Syrtis, genus of insects, IX. 162.
 Syrup, XX. 795 *et seq.*—fruits preserved in, IX. 767.
 Système Beaufumé, for preventing smoke, XX. 358.
 Systropha, genus of insects, IX. 199.
 SYSTYLE, in architecture, XX. 912; III. 513.
 SYZAN, Russian town, XX. 912.
 SYZYG, in astronomy, XX. 912; IV. 32 *et seq.*
 SZALONTA, in Hungary, XX. 912.
 SZARRAS, in Hungary, XX. 912.
 SZASZ REGEN, in Transylvania, XX. 912.
 SZATHMAR, in Hungary, XX. 912.
 Szechenyi (Count Stephen), Hungarian author, XII. 20, 23.

SZE—TÆ

SZEGEDIN, in Hungary, XX. 912.
 Szekerly-vasarhely, in Transylvania, XIV. 313.
 SZENTA, in Hungary, XX. 912.
 SZENTES, in Hungary, XX. 912.
 Szerelmey (Mr), his method of protecting the surface of building stones, &c., XX. 735.
 SZEXARD, or Szegszard, in Hungary, XX. 912.
 SZIGETH, in Hungary, XX. 912.
 SZOLNOK, in Hungary, XX. 912.
 Szu-chuan, in China, XX. 29.

T

T, letter of the alphabet, XXI. 1—in abbreviations, II. 20.
 Taban-tree, V. 199.
 Tabanii, family of insects, IX. 231.
 Tabanus, genus of insects, IX. 231.
 Tabard, in heraldry, XI. 322.
 TABASCO, Mexican State, XXI. 1; XIV. 726, 718.
 Tabaxir, or Tabascheer, IV. 407.
 TABERNACLE, XXI. 1.
 —in architecture, III. 513.
 —Connection, religious body, XIV. 693.
 TABERNACLES (Feast of), XXI. 1; IX. 494.
 TABLE BAY, XXI. 1; X. 711.
 —mountain, XXI. 1; X. 714; XIV. 655—its table-cloth, ib.
 —computing, II. 8.
 Table-land, in Switzerland, XX. 888.
 Table-talk. See Ana.
 Tables, Twelve, Laws of the, XIX. 301; VI. 739.
 —glacier, X. 635.
 Tablet, in architecture, III. 513.
 TABOR, town in Bohemia, XXI. 1.
 —(MOUNT), XXI. 1; XVII. 183.
 Taborites, XXI. 972.
 TABRIZ, Persian town, XXI. 2.
 Tabu, or Taboo, XVIII. 275, 276.
 Tabular spar, XV. 82.
 —painting, XVII. 52.
 Tacanova, island, XVII. 240.
 Taccaceæ, nat. order of plants, V. 212.
 Taccazze, river, II. 55.
 Tachina, genus of insects, IX. 248.
 Tachinus, genus of insects, IX. 104.
 Tachometer, XII. 143; XVI. 60.
 Tachos, or Teos, king of Egypt, VIII. 466.
 Tachyphallite, XV. 87.
 Tachydromia, genus of insects, IX. 236.
 Tachydromiæ, family of insects, IX. 236.
 Tachydromus, genus of reptiles, XIX. 30.
 Tachylite, mineral, XV. 83.
 Tachypetes, genus of birds, XVI. 814.
 Tachyphonus, genus of birds, XVI. 751.
 Tachyporus, genus of insects, IX. 104.
 TACITUS (C. Cornelius), XXI. 2; XI. 548
 —his Life of Agricola, V. 378—his annals, III. 215—on the army of Sesontrix, 622, n. 3—on political constitutions, VIII. 760, 761—his allusion to London, XIII. 658—his allusion to Christ's death, XII. 760—on the Germans, VI. 602, 606; X. 572, 573—on the Goths, 727—contrasted with Suetonius, XX. 788.
 —Roman emperor, XIX. 349.
 Tacking, in seamanship, XX. 18.
 Tackle, in mechanics, XIV. 401—White's, ib.
 TACNA, town in Peru, XXI. 5; XVII. 474.
 Taconic system, in the geology of New York, XVI. 214.
 Tactics, military, XXI. 702—of battles, 710—naval, XVI. 108; XXI. 719.
 Tacubaya, in Mexico, XIV. 723.
 TADCASTER, XXI. 5—building-stone of, XX. 712.
 Tadjiks, people of Bukhara, V. 758.
 TADMOR, XXI. 5; XVII. 221.
 Tadorna, genus of birds, XVI. 817.
 Tadpoles, XIX. 74, 79—temporary gills of, III. 113.
 Tania, in architecture, III. 507, 513.
 —genus of zoophytes, XXI. 979, 977, 998—in horses, 569.

TÆ—TAM

Tænianotus, genus of fishes, XII. 283.
 Tæniidæ, family of fishes, XII. 303.
 Tæniobranchiata, order of mollusks, XV. 334.
 Tæniura, genus of fishes, XII. 328.
 Taff, river, X. 642.
 TAFILLELT, or Taflet, in Morocco, XXI. 5; XV. 595.
 Tafnet, Egyptian deity, VIII. 437.
 TAGANROG, in Russia, XXI. 5; VIII. 520; XIX. 521.
 Taganyka, African lake, XV. 500.
 Tagenia, genus of insects, IX. 129.
 TAGHMON, town in Wexford, XXI. 5.
 Tagilite, mineral, XV. 104.
 TAGLIACCOZZI (Gasparo), or Taliacotius, surgeon, XXI. 5; XX. 818.
 TAGODAST, in Morocco, XXI. 5.
 TAGUS, river, XXI. 5, 302; IX. 339; XIII. 804; XVII. 647; XVIII. 393; XX. 486, 487—gold of the, XVIII. 394.
 Tahir Pasha, VIII. 490.
 TAHITI, XXI. 6; XVIII. 280, 281—society of Arrecoys in, III. 676—bread-fruit of, V. 301—tradition of the Deluge in, VII. 719—French protectorate of, X. 217.
 Tahitian group of islands, XVIII. 280.
 Tai Mihal, mausoleum at Agra, II. 244.
 TAI-WAN, town in the island of Formosa, XXI. 6.
 TAI-YUAN, town in China, XX. 6.
 Taico Sama, Japanese emperor, XII. 697.
 Tail of animals, bones of the, III. 76, 84—muscles, 93—uses, ib.
 Taille, in France, X. 273; XXI. 47, 38, n.
 Tailors, diseases of, XIV. 442—merchant tailors, XXI. 913.
 Tailzie. See Entail.
 TAIN, town in Ross-shire, XXI. 6.
 Taira, in zoology, XIV. 156.
 Taizalæ, Caledonian tribe, VI. 74.
 Talapat. See Talipat.
 TALAVERA-DE-LA-REINA, in Spain, XXI. 6
 —battle of, III. 690; V. 606; XXI. 823.
 Talbot (W. H. Fox), his invention of calotype, I. 923; XVII. 545—his polyglottic process, 544, 545—on the colours of double plates, XVI. 622, 625.
 —(Sir John), in Ireland, XII. 472.
 Talbotstown, in Ireland, XXI. 859.
 Talbotype, XVII. 545, 546. See Calotype.
 Talc, mineral, XV. 78.
 Talca, in Chile, VI. 547.
 Talcahuano, in Chile, VI. 546; VII. 228.
 Talcose schist, XV. 154.
 TALENT, XXI. 6; XVI. 356; VII. 66, 67.
 TALFOURD (Thomas Noon), dramatist, XXI. 6.
 Taliacotius. See Tagliacozzi.
 Talians, Indian people, XXI. 151.
 Talicius, VII. 317.
 TALIPAT Palm, XXI. 7.
 Talismans, II. 735.
 Tall, various meanings of the word, VIII. 10.
 Tallahassee, town in Florida, IX. 667.
 Tallard (Marshal), V. 448.
 TALLEYRAND-PERIGORD (Charles Maurice de), XXI. 8; X. 507, 125, 141 *et seq.*—death and character, 213—his reply to Lord Grenville, V. 569.
 TALLIEN (J. Lambert), XXI. 14; X. 90 *et seq.*
 TALLIS (Thomas), musician, XXI. 14.
 TALLON, town in Ireland, XXI. 15.
 Tallow, XVI. 493—candles of, VI. 170—mineral, XV. 124—vegetable, VI. 589; XVI. 496—of New South Wales, IV. 285.
 Tally, calculation by, II. 8.
 TALMA (F. Joseph), tragedian, XXI. 15.
 TALMUD, XXI. 15; XII. 776. See Mishna.
 Talmudists, IX. 395—in Russia, XIX. 523.
 Talpa, genus of mammalia, XIV. 152; XXI. 546, 547. See Mole.
 Talt, loch, XX. 329.
 Tamandua, genus of mammalia, XIV. 192.
 Tamar, river, VII. 406, 763.
 —canal, VII. 763.
 Tamaricaceæ, nat. order of plants, V. 183.
 Tamarind tree, V. 190.
 Tamarisk, not injured by sea air, VII. 406.

TAM—TAR

Tamatave, in Madagascar, XIII. 793.
 Tamatia, genus of birds, XVI. 779.
 Tamaulipas (Santa Anna de), XXI. 17.
 TAMAULIPS, or Tamaulipas, Mexican state, XXI. 16; XIV. 727, 718.
 Tambookies, Kafarian tribe, XIII. 32, 37.
 Tambour lace, XIII. 142.
 Tambouring machine, VII. 449.
 TAMBOV, in Russia, XXI. 16; XIX. 521.
 TAMERLANE, or Timoor-lang, XXI. 17. See Timur.
 Tamise, town in Belgium, XXI. 179.
 Tammophilus, genus of insects, IX. 140.
 TAMPICO, seaport in Mexico, XXI. 17; XIV. 728.
 Tamping, in blasting rocks, IV. 756.
 TAMWORTH, English town, XXI. 17.
 Tan. See Tanning.
 Tana, or Tarna, river in Lapland, XIII. 234.
 Tanagers, birds, XVI. 751.
 TANAGRA, ancient town in Boeotia, XXI. 17.
 —genus of birds, XVI. 751.
 Tanais, river, XIX. 869. See Don, in Russia.
 Tancredia, fossil mollusks, XVII. 107.
 Tanda, in Oude, XVII. 17.
 TANDERAGEE, in Ireland, XXI. 17.
 TANGANYIKA, African lake, XXI. 17.
 Tangent, X. 514; XXI. 338—nature and calculation of tangents, XIII. 565—tangent-plane, XX. 153, and n. 3.
 TANGERMÜNDE, town in Saxony, XXI. 17.
 Tanghin, poison, V. 199.
 TANGIER, in Morocco, XXI. 17; XV. 596
 —pilgrims from, ib.—mole at, V. 301—bombardment of, by the French, X. 221.
 Tangrolipix, VII. 314.
 Tangun horse, V. 34.
 TANIS, town of ancient Egypt, XXI. 18; VIII. 498.
 Tanistry, law of, XIX. 750.
 TANJORE, in India, XXI. 18.
 Tanks for liquid manure, II. 268—iron tanks in ships, XX. 24.
 TANNAHILL (Robert), XXI. 18.
 TANNER (Thomas), antiquary, XXI. 19.
 Tannic acid in wines, XXI. 889.
 Tannin, VIII. 281; XIII. 305—in tea, XXI. 82.
 TANNING, XXI. 19—materials for, XIII. 305—recent improvements in, 311—Sir H. Davy on, VII. 668.
 Tanrec, in zoology, XIV. 158—dentition of, XVI. 452—its hybernation, III. 181; XII. 62.
 Tansy, plant, XI. 745.
 Tantalite, mineral, XV. 110.
 Tantalum, XV. 66.
 Tantallon Castle, XI. 178.
 TANTALUS, in fable, XXI. 19.
 —genus of birds, XVI. 800.
 Tanypeza, genus of insects, IX. 253.
 Tanypus, genus of insects, IX. 225.
 Tanysiptera, genus of birds, XVI. 773.
 Tanystrophæus, fossil reptiles, XVII. 146.
 Tao-tse, VI. 569.
 Taormina, in Sicily, XX. 244.
 Tap-root, V. 78—in trees, XVII. 769; in the oak, XXI. 273.
 Tapes, fossil mollusks, XVII. 108.
 TAPESTRY, XXI. 19.
 Tapetum, in various animals, III. 96.
 Tapeworm, XXI. 978—its mode of reproduction, XVII. 688.
 Taphazous, genus of mammalia, XIV. 149.
 Taphrenchyma, tissue in plants, V. 70.
 Tapioca, V. 294.
 Tapir, in zoology, XIV. 199; II. 713—dentition of, XVI. 471.
 Tapping, XXI. 567.
 TAPROBANE, ancient name of Ceylon, XXI. 21; X. 463. See Ceylon.
 TAR, XXI. 21; XVI. 100—coal-tar, X. 433—used for stamping cotton, IV. 764—tar apparatus in gas-manufacture, X. 415—from peat, XVII. 359—tarring of ropes, XIX. 404.
 Tara, hill of, in Meath, XIV. 377.
 —town in Siberia, XXI. 21.
 Tarakal. See Saghalien.
 TARANCON, town in Spain, XXI. 22.

TAR—TAS

Tarannon shales, XV. 198.
 Taranta (Valesco de), XX. 817.
 Taranto, gulf of, XX. 242.
 —town of Naples, XXI. 22.
 Tarapaca, in Peru, nitrate of soda in, XVII. 472.
 TARARE, French town, XXI. 22.
 —an excessive eater, VIII. 23.
 TARASCON, town of France, XXI. 22.
 TARAZONA, town of Spain, XXI. 22.
 TARBAGATAI, town in China, XXI. 22.
 TARBES, town in France, XXI. 23.
 TARBOLTON, in Ayrshire, XXI. 23.
 Tardigrada, tribe of mammalia, XIV. 190.
 Tare, in commerce, III. 595.
 Tarentine war, XIX. 305; XXI. 22.
 Tarentula, III. 383.
 Tarentum, XXI. 22—coins of, XVI. 363.
 Tares, culture of, II. 312.
 TARGUM, XXI. 23; XIX. 838.
 Tariel, poem of, X. 569.
 TARIFA, seaport in Spain, XXI. 24.
 TARIFF, XXI. 24—Sir Robert Peel's reform of, XVII. 364; VII. 384.
 TARKI, or Tarku, town in Asiatic Russia, XXI. 24.
 Tarlet (Emile), his work on the Chinese Silk-worm, IX. 24.
 TARMA, town in Peru, XXI. 24.
 TARN, in France, XXI. 24.
 —river, XXI. 24, 25.
 TARN-ET-GARONNE, in France, XXI. 25.
 TARNOPOL, town in Austria, XXI. 25.
 Tarnowitzite, mineral, XV. 93.
 Tarpeian hill, in Rome, XIX. 358.
 TARPORELEY, English town, XXI. 25.
 TARQUINI, ancient Etrurian city, XXI. 25.
 Tarquinius Priscus, XIX. 297.
 —Superbus, XIX. 297.
 TARQUINS, XXI. 25.
 Tarracensis, ancient Spanish province, XX. 458.
 TARRAGONA, Spanish seaport, XXI. 25—siege of, in 1813, V. 613.
 TARRASA, town in Spain, XXI. 26.
 TARSHISH, XXI. 26; X. 460, n.; VII. 185.
 Tarsipes, dentition of, XVI. 448.
 Tarsius, genus of mammalia, XIV. 145.
 Tarsus, in anatomy, bones of the, III. 36—muscles of the, 39—in the mammalia, 82—in birds, 86—in reptiles, 88.
 —town in Asia Minor, XXI. 28.
 TARTAGLIA, or Tartalea (Nicholas), XXI. 28—his improvements in algebra, I. 557; II. 484—on gunnery, XI. 103, 104—on fortification, IX. 817, 819.
 Tartar, employed in dyeing, VIII. 298.
 Tartareus, species of lichen, VIII. 285.
 Tartaric acid, VI. 515; IX. 758—used for discharging colours, VIII. 316.
 —languages, IX. 389; XIII. 199, 216.
 Tartars, XXI. 28; II. 766; III. 747, 751; VII. 504; IX. 344, 388; XIX. 522, 550—skulls of, III. 29—conquests of, in Asia, 745—European embassies to, in the middle ages, 753—cultivation of astronomy by, 795—Baghdad taken by, IV. 364—the Chinese derived from, VI. 558—their mode of warfare, 583—their invasions of Poland, XVIII. 140, 142—conquest of Russia by, XIX. 472—Moscow burnt by, 474—defeated by the Swedes, XX. 851. See Timur.
 TARTARY, XXI. 28—cattle of, III. 740. See Tartars.
 Tartessus, XXI. 27.
 TARTINI (Giuseppe), violinist, XXI. 28—on harmony, XV. 701.
 Tarudant, town in Morocco, XXI. 158.
 Tash-kurgan, XIII. 77.
 TASHKEND, in Turkestan, XXI. 29.
 Task-work, XIV. 280.
 TASMAN (Abel Janssen), XXI. 29—his discovery of New Holland, IV. 252, 253; and New Zealand, 266—on the aborigines of Australia, 258—Papua visited by, 262—Van Diemen's Land discovered by, X. 474; XXI. 30—exploratory voyage of, X. 474.
 TASMANIA, XXI. 29—discovery of, by Tasman, IV. 252; X. 474—general view of, IV. 261—discoveries in, 253—Sir John Franklin governor of, X. 296—

TAS—TAY

- height of mountains in, XVII. 646—
 wool of, XXI. 912.
 TASSIE (James), modeller, XXI. 33.
 — (William), XXI. 33.
 Tassin (Leonard), anatomist, II. 763.
 TASSO (Torquato), XXI. 34—his table-talk,
 II. 740, 741—translations of his Jeru-
 salem Delivered, by Fairfax, IX. 469;
 by Hoole, XI. 622—his poetry, XVIII.
 95, 111.
 TASSONI (Alessandro), XXI. 35—poetry of,
 XVIII. 112.
 Taste, sense of, II. 178; XVII. 677; XIV.
 564—in the bee, IV. 575—in insects,
 IX. 44—fishes, XII. 220—organ of, III.
 47, 99. See Tongue.
 — or perception and judgment of
 beauty, IV. 534—standard of, 554—
 effect of education on, 545—the real in
 the philosophy of taste, XIV. 623—as
 an incentive to virtue, XV. 564—na-
 tional tastes, IV. 544.
 Tata, Hungarian town, VIII. 113.
 TATE (Nahum), poet, XXI. 35, 171—on
 Shakespeare, XX. 71—his co-authorship
 with Brady in a metrical version of the
 Psalms, V. 265.
 — (Thomas), on the law of density of
 steam, XX. 572.
 TATIANUS, or Tatian, XXI. 35; IX. 492;
 X. 688; XXI. 197.
 TATIUS (Achilles), Greek writer, XXI. 35.
 Tatooing, IX. 487; XX. 231.
 TATTA, in Sindh, XXI. 35; XX. 305. See
 Thattha.
 Tattar (Archdeacon), Syriac MSS. dis-
 covered by, XII. 360; XIII. 393.
 Tauler (John), German mystic, XV. 756.
 TAUNTON, in Massachusetts, XXI. 36.
 — in Somersetshire, XXI. 35; XX.
 411—vale of, 410.
 Taupenot (M.), his photographic process,
 XVII. 549.
 Tauri, VII. 504.
 Tauric Chersonese, coins of, XVI. 368.
 Taurichthys, genus of fishes, XII. 301, 302.
 TAURIDA, XXI. 36; VII. 504; XIX. 521.
 Taurinum, taken by Hannibal, VI. 294.
 Tauris, bazaar of, IV. 525.
 Tauriscus of Tralles, III. 303.
 TAURUMENIUM, in Sicily, XXI. 36.
 TAURUS, in Asia Minor, XXI. 36; III. 758.
 — and Anti-Taurus, XXI. 377.
 Tautog, fish, XII. 265.
 Tautoga, genus of fishes, XII. 267.
 Tautolite, mineral, XV. 89.
 Tavai Poenamoo, island, IV. 267; XVI.
 232.
 Tave, Welsh river, VI. 52.
 TAVERNIER (Jean Baptist), French travel-
 ler, XXI. 36—on the use of tea in Japan,
 89.
 TAVIRA, in Portugal, XXI. 36.
 TAVISTOCK, in Devonshire, XXI. 36.
 Tavoliere, XX. 248.
 TAVOY, in India, XXI. 37.
 Tavy, river, VII. 763.
 Tawee-Tawee, island, XX. 447.
 TAWING, XXI. 37; XIII. 310.
 Taxacea, nat. order of plants, V. 209.
 TAXATION, XXI. 37; XVIII. 234—direct,
 XXI. 37, 43—indirect, 37, 57—increase of,
 the cause of rise of prices in war, VII. 199
 —comparative burden of taxes borne by
 agriculturists, 393—practice of taxation
 said to have been introduced by the
 Crusades, 532—connection between the
 state of agriculture and extent of, VIII.
 725—hitherto favourable to the progress
 of the country, XIV. 276—for support
 of the poor, XVIII. 301—tax on game,
 XX. 210—on woollen and worsted goods,
 XXI. 914, 917—influence of, on wages,
 680—in France, X. 273; India, XI. 476,
 510 *et seq.*; Scotland, XIX. 809; Prussia,
 XVIII. 674; the United States, XXI.
 427. See Income Tax, Property Tax,
 Funding System.
 Taxers, in Bologna University, XXI. 447.
 Taxicornes, family of insects, IX. 131.
 Taxological botany, V. 174.
 Tay (Loch), XVII. 455; XIX. 794.
 — RIVER, XXI. 76; XVII. 455, 647;

TAY—TEA

- XIX. 791, 794—salmon fisheries of, IX.
 603, 604—improvement in its navigation,
 XVI. 74—amount of river and tidal
 water in, 83—increase of tidal water by
 works on, *ib.*—inundations of, XVII.
 451 and *n.*
 Taygetus, mountain, XI. 11; XIII. 147.
 Taylerson and Co., their diagonal framing
 in ship-building, XX. 204.
 TAYLOR (Brook), XXI. 76; I. 714—a new
 branch added by him to the analysis
 of variable quantity, 648—more remark-
 able for the ingenuity and depth, than
 for the perspicuity of his writings, *ib.*
 —theorem known by his name, *ib.*—the
 only British mathematician after New-
 ton who could enter the lists with the
 Bernoullis, 714—on capillary attraction,
 731—on the force of adhesion, II. 140—
 problem in the integral calculus pro-
 posed by, IX. 675—his theorem, 689;
 applied to the development of functions,
 691—on magnetism, XIV. 4.
 — (Dr), of Norwich, on the spirit and
 temper with which theology should be
 studied, XXI. 184—on original sin, 204.
 — (Ephraim), his power-loom, XXI.
 789.
 — (Isaac), his definition of imagina-
 tion, XII. 364.
 — (James), his connection with steam-
 navigation, I. 869; XX. 637.
 — (JEREMY), XXI. 77.
 — (JOHN), the water poet, XXI. 78.
 — (JOHN), philologist, XXI. 78.
 — (Dr John), his translation of a
 Hindu treatise on algebra, II. 487.
 — (Mr), on coal strata, VII. 117.
 — (Mr), his oil-gas apparatus, X. 427.
 — (Mr), on the transmission of ancient
 books, XIII. 388, *n.* 1.
 — (Rev. Robert), on the natives of
 New Zealand, XVI. 237, 238.
 — (Sir Robert), his merits as an
 architect, III. 455.
 — (THOMAS), the Platonist, XXI. 79.
 — (Walter), of Southampton, his
 block-machinery, IV. 783.
 — (WILLIAM), XXI. 79.
 — Institute, at Oxford, XVII. 35.
 Taylor's Tables of Logarithms, XIII. 555.
 — catalogue of stars, IV. 95.
 TCHAD, or Tsad (Lake), XXI. 80; II. 214;
 V. 50—navigated by Dr Overweg, II.
 211, 214—Dr Barth's account of, X. 478.
 Tchadda, or Tschadda, African river, X.
 478; II. 214; XVI. 266.
 Tchaiphut Kaleh, VII. 505.
 Tchar, mountains in Turkey, XXI. 376.
 TCHAUSSY, town in Russia, XXI. 80.
 TCHIBOKSARI, town in Russia, XXI. 80.
 Tcheffkin, on the mining produce of
 Russia, XIX. 543.
 Tcheffkinite, mineral, XV. 90.
 Tchelninar, ruins of, III. 401.
 Tchemakha, XIX. 551.
 TCHERKASK, two Russian towns, XXI. 80.
 Tchernaya, battle of, XIX. 509.
 TCHERNIGOV, in Russia, XXI. 80; XIX.
 521.
 Tchihatcheff's work on Asia Minor, III.
 758.
 TCHORUM, town in Turkey, XXI. 80.
 Tchoufuf Kaleh, VII. 505.
 TCHUGUJEV, town in Russia, XXI. 80.
 TEA and TEA-TRADE, XXI. 81; IX. 761—
 of Assam, III. 763—Brazil, V. 294—
 Burmah, 778—China, VI. 589—Japan,
 XII. 693—Western Himalaya, XI. 444
 —Kemaon, XIII. 59—Nganhoei, XVI.
 241—Punjab, XVIII. 690—Cochin-
 China, VII. 48—green and black, V.
 185—exports from Canton, VI. 200—
 consumption of, 591—exports from
 China, 594; duty on, in China, XXI.
 60—history of the duties on, 70—
 culture of, in United States, 425—adul-
 terations of, IX. 769.
 — order of plants, V. 185.
 — of Paraguay, IV. 827; XVII. 268.
 See Maté.
 Teachers, diseases of, XIV. 442—relative
 duties of teacher and taught, XV. 569.

TEA—TEL

- Teak-wood, XVI. 101; XXI. 276—in ship-
 building, XX. 167—tree, V. 202—in
 Burmah, 779—Bombay, 2—Malabar,
 XIV. 104—India, XI. 454—Moulmein,
 XV. 667—African, V. 206.
 Teals, birds, XVI. 819; IX. 762.
 TEANO, town of Naples, XXI. 92.
 Tears, gland secreting, III. 45.
 Teazel, order of plants, V. 196.
 — grown in Gloucestershire, X. 680.
 Teazling of woollen cloth, XXI. 922.
 Technical education, XV. 807.
 Technology, chair of, in Edinburgh, XXI.
 485, 874.
 Tectibranchiata, order of mollusks, XV.
 371—fossil, XVII. 111.
 Tectizite, mineral, XV. 97.
 Tedla, in Morocco, XXI. 93.
 Tees, river, VIII. 266—navigation of the,
 XX. 707.
 Teeswater cattle, II. 340—sheep, 346.
 Teeth, II. 830; XVII. 658—works on, II.
 767—relation between food and, 774—
 structure and development of, 830;
 III. 25—comparative anatomy of,
 105—of fishes, 106; XII. 222; fossil,
 118, 119—of the mammalia, XIV. 135,
 146, *n.*; XVII. 151, 158, 159 *et seq.*—
 Aristotle on, XIV. 123—of serpents,
 XIX. 44—in the domestic animals, XXI.
 563; their diseases, 564—homologies of
 the teeth, XVI. 478—dyed black by the
 Japanese, XII. 690. See Odontology.
 — of wheels, XIV. 393 *et seq.*—friction
 of, 407—in clocks and watches, VII. 36.
 See Wheels, Mechanics.
 TEFLIS, town in Georgia, XXI. 92; X. 566;
 XIX. 551—trade of, III. 755—meteo-
 rological observations at, XIV. 687—
 government, XXI. 521.
 TEFZA, town in Morocco, XXI. 93.
 TEGEA, ancient Grecian city, XXI. 93.
 Tegerhy, in Fezzan, IX. 530.
 Tegmen, in botany, V. 139.
 TEGNER (Elias), Swedish poet, XXI. 93;
 XIX. 695, 700.
 TEGUCIGALPA, town in Honduras, XXI.
 93; XI. 613, 614.
 Tehama, III. 341, 343.
 TEHERAN, or Tehran, Persian city, XXI.
 93—climate of, XVII. 422.
 TEHUANTEPEC, town in Mexico, XXI. 93;
 XIV. 725.
 — isthmus of, II. 711.
 Teifi, river, VI. 233—vale of, *ib.* See
 Teivy.
 TEIGNMOUTH, in Devonshire, XXI. 93—
 railway to, VII. 763.
 Teinds, in Scotland, court of, XVIII. 494.
 Teinoscope, XVI. 586.
 Teivy, river, VI. 52.
 Telecles, Greek sculptor, XIX. 853.
 Teledu, in zoology, XIV. 158.
 TELEGRAPH (Electric), XXI. 94; VIII. 543
 —its early history, I. 985—invention of,
 II. 725—three independent inventors, I.
 986—Gauss and Weber's early experi-
 ments, 985—telegraphs of Morse, Stein-
 heil, and Wheatstone, *ib.*, 986 (see these
 articles)—Bain's, VIII. 544; I. 986—Mr
 Fothergill Cooke's services to, *ib.*, *n.*
 —its services to astronomy, IV. 110—to
 find the longitude by, XIII. 690—sub-
 marine telegraph, I. 986; between Dover
 and the French coast, *ib.*; in the Red
 Sea, XVIII. 819 (see Atlantic Tele-
 graph)—telegraph offices on railways,
 767—utility of, in preventing railway
 accidents, 795—in Belgium, IV. 626—
 England, VIII. 722—London, XIII. 679
 —Russia, XIX. 536—Spain, XX. 491—
 Switzerland, 890—United States, XXI.
 427.
 Teleosaurus, fossil reptiles, XVII. 152—
 teeth of, XVI. 437.
 Telephorus, genus of insects, IX. 110.
 TELESCOPE, XXI. 117—invention of, I. 626;
 II. 86; XIII. 449; XVI. 524, 527—im-
 provers of, II. 87; Sir William Herschel,
 I. 839; Dolland, Rosse, Lassell, *ib.* (see
 these articles)—construction of, by
 Galileo, 606; II. 87; III. 800; X. 376;
 XVI. 528—advantages to science arising

TEL—TEM

- from, I. 19, *n.* 2; particularly astronomy,
 613—law on which its construction de-
 pends discovered by Snellius, 747; but
 simplified, and first published by Des-
 cartes, *ib.*—magnifying power of, 839;
 XVI. 569—illuminating power, I. 839—
 space-penetrating-power, 840—rationale
 of, XVI. 569—refracting telescopes, II.
 39; XVI. 580—reflecting, 532, 569—
 achromatic, II. 86; XVI. 534, 581—
 astronomical, IV. 149; XVI. 569—ap-
 plied to quadrants, III. 802; to sextants,
 XVI. 29—Dorpat, IV. 150—Gregorian
 reflecting, XVI. 533—Newtonian, *ib.*—
 Cassegrainian, *ib.*—Lord Rosse's, IV.
 151; I. 863—Herschel's forty-feet re-
 flector, 840—Blair's aplanatic, XVI. 536
 —Lassell's, I. 860. See Optics.
 Telfair (Mr), huge medusa seen by, XXI.
 997.
 TELFORD (Thomas), engineer, XXI. 145—
 his suspension bridges, I. 875—Menai
 bridge by, *ib.*—aqueducts designed by,
 III. 339—iron bridge in London pro-
 posed by, XII. 579—other iron bridges
 by, 578, 583, 584—his method of road-
 making, XIX. 226—his birthplace, XI.
 183.
 TELL (William), XXI. 146; XX. 884.
 — el Amarinch, in Egypt, VIII. 504.
 — el-Kady, in Palestine, XVII. 184,
 185.
 TELLEZ (Gabriel), dramatist, XXI. 147.
 TELLICHERRY, in India, XXI. 147.
 Tellina, genus of mollusks, XV. 347, 350.
 Tellinidæ, family of mollusks, XV. 350.
 Telluric iron, XV. 114.
 Tellurism, XX. 445.
 Tellurite, mineral, XV. 112.
 Tellurium, VI. 495; XV. 65, 114—its dis-
 covery, XIII. 106—black, or foliated,
 XV. 118.
 Temera, genus of fishes, XII. 327.
 TEMESVAR, XXI. 147.
 Temia, genus of birds, XVI. 765.
 Temmink (M.), his arrangement of the
 mammalia, XIV. 130, 131—on birds,
 XVI. 731—his ornithological system,
 821.
 Temnodon, genus of fishes, XII. 296, 298.
 Temnopleurus, fossil echinoidea, XVII.
 100.
 TEMPE, vale of, XXI. 147; XI. 12.
 Temper, in horses, XI. 642, 650, 688.
 Tempera painting, XVII. 64.
 Temperament, XVII. 567—its influence on
 insanity, XIV. 536; and on health, XIX.
 607.
 — OF THE MUSICAL SCALE, XXI. 148.
 Temperance, conducive to health, XIV.
 441.
 Temperate zones, X. 484.
 Temperature, Gay-Lussac's observations
 on its diminution with increase of
 height, II. 182, 184—of the climate of
 Africa, 215—of the climate of Arabia,
 III. 341—influence of the solar spots on,
 IV. 88—its effect on cohesive force, VI.
 208; and on the brilliancy of gas-light,
 X. 424—variations of, in the climate of
 England, VIII. 718—mean of several
 places in Europe, IX. 381—artificial
 means of increasing and diminishing,
 XI. 275—its influence on the distri-
 bution of organised beings, XII.
 329; on the distribution of plants, V.
 219—isothermal lines, VI. 771—law of
 its decrement on ascending into the
 air, XIV. 641—death from extremes of,
 431—effect of, on magnets, 6—diurnal
 and annual fluctuations of, 670—of
 mines, XV. 225—one of the chief ele-
 ments in our notion of climates, XVII.
 610—distribution of, 611—normal law
 of mean temperature, *ib.*—average sur-
 face temperature of the earth, 613—
 extremes of absolute temperature over
 the globe, *ib.*—line of maximum mean,
ib.—of man and animals, 665—plague
 supposed to be dependent on, 751—of
 the Polar Regions, XVIII. 178—tem-
 perature of steam, XX. 555, 571—rela-
 tion of the pressure and temperature of

TEM—TEN

- steam, 564—absolute, in thermo-dynamics, 618. See Climate, Heat, Warming, &c.
- Tempest in France in 1788, X. 48.
- TEMPESTA, XXI. 148. See Modyn.
- TEMPLARS, Knights of the Temple, XXI. 148; VI. 622; XIII. 115; X. 15; XV. 310, 408.
- TEMPLE (Sir William), XXI. 148; XX. 870—on ancient and modern learning, IV. 657—on the mercantile prosperity of Holland, VII. 197—Dean Swift amanuensis to, XX. 837, 870—his posthumous works edited by Swift, 871.
- (Sir Grenville), his description of a Maltese galley, XX. 123.
- of Jerusalem, XII. 740, 742—its destruction necessarily abolished the Mosaic system, I. 468—belief of the Jews that it will yet become the centre of worship for all mankind, 485—Julian's attempt to rebuild it, II. 644; XII. 766; XVII. 195.
- XXI. 151—Greek temples, III. 461—Roman, 469—Egyptian, 458—Mexican, XIV. 721—of Ava, IV. 321.
- or Inns of Court, in London, XIII. 672.
- libraries of the Inner and Middle, XIII. 394.
- Templecross, XXI. 840.
- TEMPLEMORE, town in Ireland, XXI. 151.
- Templeton (James), his improvement in carpet-making, VI. 272.
- Temporal bones, III. 20, 78.
- Témsah, lake, proposed harbour at, XX. 789.
- Tenacity of minerals, XV. 56—of metals, woods, &c., XX. 756, 757.
- Tenaille, in fortification, IX. 810, 818.
- Tenant-right, II. 365—tenant-at-will, ib. See Lease, Tenure.
- TENASSERIM, XXI. 151.
- TENBURY, in Worcestershire, XXI. 152.
- TENBY, town in Wales, XXI. 152.
- Tench, XII. 256—angling for, III. 160.
- Tencin (Madame de), character of her novels, XIX. 287.
- Tendons, structure of, II. 823.
- Tendrils, V. 79.
- Tenebrio, genus of insects, IX. 130.
- Tenebrionites, family of insects, IX. 130.
- TENEDOS, island, XXI. 152.
- Teneriffe, VI. 165—Blake's attack on the Spanish fleet at, IV. 752—Peak of, VI. 175; zones of vegetation on, XVII. 625; clouds as seen from, XIV. 657—old crater walls of volcano in, XXI. 604—wines of, 887.
- Tengri, or Thian Shan, mountains, XVII. 599.
- TENIERS (David), two painters of that name, XXI. 152; XVII. 75.
- TENISON (Thomas), archbishop, XXI. 152.
- Tennant (Charles), his bleaching substances, IV. 760, 761, 762—on the loss of weight sustained by linen in bleaching, 769.
- (Emerson), his act regarding the copyright of designs for manufactures, VII. 362.
- (Mr), on Hindu penances, XI. 469.
- (SMITHSON), chemist, XXI. 152.
- (WILLIAM), poet and orientalist, XXI. 154.
- Tennant's grubber, II. 272—system of winter fallowing, 290.
- Tennantite, mineral, XV. 120.
- TENNEMAN (W. Gottlieb), XXI. 155—his History of Philosophy, V. 693.
- TENNESSEE, American state, XXI. 155, 419—debt of, 428—wines, 888.
- river, XXI. 155.
- Tenny, in heraldry, XI. 324.
- Tenochtitlan, ruins at, II. 684.
- Tenon and mortise, XII. 810.
- Tenoning, in carpentry, V. 747.
- Tenorite, mineral, XV. 112.
- Tenreca. See Tanrec.
- TENSE, in grammar, XXI. 156; X. 763, 790.
- Tensift, river, XV. 594.
- Tension, failure of timber by, XX. 755, 779.

TEN—TER

- Tent, Arabian, III. 353—Lapland, XIII. 239.
- Tentacles, in mollusks, XV. 323, 355, 358.
- Tentaculites, fossils, XVII. 101.
- TENTERDEN, town in Kent, XXI. 156.
- (CHARLES ABBOTT), lord, XXI. 157.
- Tenthredinæ, family of insects, IX. 183.
- Tenthredo, genus of insects, IX. 183.
- Tentorium, in anatomy, III. 56, 105.
- TENTYRA, XXI. 157. See Denderah.
- Tentyria, genus of insects, IX. 129.
- Tenuirostres, tribe of birds, XVI. 768.
- TENURE, in law, XXI. 157—right to sit in the House of Lords by, XVII. 292—of land, II. 364; in India, XI. 512, 513; Egypt, VIII. 428.
- Teocallis, Mexican place of worship, II. 684; XIV. 722—Robertson's mistake regarding, II. 684, n.
- Tephroite, mineral, XV. 89.
- Tequendama, waterfall of, II. 668; III. 131; IV. 808.
- Ter-Goes, town in Holland, X. 693.
- Teral, or Terrae, wooded region of the Himalayas, XI. 437, 438.
- TERAMO, town of Naples, XXI. 157.
- Teratolite, mineral, XV. 84.
- Teratology, V. 120; XVII. 702.
- Terbium, VI. 488.
- TERCEIRA, island, XXI. 157; IV. 336.
- Terchloride of phosphorus, VI. 480.
- Terebella, genus of annelides, XI. 295.
- Terebellum, genus of mollusks, XV. 388.
- Terebinth tree, V. 190.
- Terebinthaceæ, nat. order of plants, V. 189.
- Terebrantia, insects, IX. 183.
- Terebratella, genus of mollusks, XV. 338—fossil, XVII. 103.
- Terebratula, genus of mollusks, XV. 337.
- Terebratulidæ, family of mollusks, XV. 336.
- Terebratulina, genus of mollusks, XV. 337—fossil, XVII. 103.
- Teredina, genus of mollusks, XV. 352—fossil, XVII. 108.
- Teredo navalis, XV. 353, 354; XI. 224; VIII. 77—in the Black Sea, IV. 741.
- Terek, river, XIX. 515.
- Terentia, wife of Cicero, VI. 719.
- TERENTIUS AFER (Publius), comic poet, XXI. 157—comedies of, VIII. 141—poetry of, XVIII. 104—Bentley's edition of, IV. 659.
- Varro, VI. 295.
- Teres, worm in the horse, XXI. 569.
- Tergouw. See Gouda.
- Termes, genus of insects, IX. 65, 179; II. 218.
- Terms, academical, at Oxford, XXI. 458; Cambridge, 463; Dublin, 487; Queen's Universities, 490.
- clerical, VIII. 744.
- doctrine of, in logic, XIII. 578—the quantity of, 579, 583—signs of the distribution of common terms, ib.—development of the extension of, 581—of the comprehension of, ib.—law of, 582. See Logic.
- Terminal, in architecture, III. 513.
- TERMINI, town in Sicily, XXI. 158.
- of railways, XVIII. 766. See Stations.
- Termitinæ, family of insects, IX. 179.
- Termoli, Neapolitan town, XX. 243.
- TERNATE, island, XXI. 158.
- TERNI, XXI. 158; XII. 424.
- Terns, birds, XVI. 813.
- Ternstromiaceæ, nat. order of plants, V. 185—region of, 227; XVII. 627.
- TERODANT, town in Morocco, XXI. 158.
- TERPANDER, Greek poet, XXI. 158.
- Terpsichore, XV. 699.
- Terra cotta, XX. 735—statues in, XIX. 844—remains of vessels composed of, XI. 21.
- DEL FUEGO, XXI. 158. See Tierra del Fuego.
- DI LAVORO, in Italy, XXI. 158; XII. 636.
- japonica, VI. 332—used in preparing betel, IV. 685, 686—in adulterating tea, XXI. 87—used in tanning, XIII. 306.
- TERRACINA, in the Papal States, XXI. 158; XVII. 241.

TER—TET

- TERRANOVA, in Sicily, XXI. 159; XX. 245.
- TERRASSON (Jean), XXI. 159.
- TERRE HAUTE, town in Indiana, XXI. 159.
- Terrestrial serpents, XIX. 55.
- Terrible, steam-ship, account of two voyages made by, XX. 22—rigging of, 23.
- Terrier, XI. 773.
- Territorial government, in the United States, XXI. 432.
- Territory, colonies for the sake of, VII. 140.
- Terror, Reign of, in France, X. 88.
- Tertiary epoch, in geology, XV. 195, 211—flora of, V. 237; XVII. 641—fishes, XII. 349, 351, 354, 355; XVII. 640—ichthyodolurites, 117—shells, XV. 403—corals, XVII. 97—rocks, 587, 588; of New York, XVI. 215; Russia, XIX. 518; Spain, XX. 482.
- TERTULLIANUS (Q. S. F.), XXI. 159—his execration of the anatomical researches of Herophilus, II. 751—on the theatre, VIII. 142—on theology, XXI. 191 *et seq.*
- TERUEL, in Spain, XXI. 159.
- TERZETTO, in music, XXI. 159.
- TESCHEN, in Moravia, XXI. 159.
- Tessarops, genus of arachnides, III. 383.
- Tesseral system of crystallisation, XV. 41—combinations of, 43—twin crystals, 51.
- Tesseratoma, genus of insects, IX. 162.
- Test Act, passing of the, V. 426—attempts in 1787, 1790, 1791, to get it repealed, 522, 562, 638—repeal of, 652.
- objects for microscopes, XIV. 802.
- tube, in bleaching, IV. 763.
- Testa, in botany, V. 139.
- Testacea, family of mollusks, XV. 401—hermaphrodites among the, III. 171.
- Testacella, genus of mollusks, XV. 374.
- TESTAMENT, XXI. 159. See Wills.
- New, Dispensation. See Gospel.
- New, Scriptures, IV. 697—formation of the canon, ib.—canonical books of, 698—state of the text, 698; XIX. 835—various readings, IV. 698—for the blind, 782—translation of the word Testament in Scripture, I. 480, n. 2—always to be understood as a covenant, 481. See Bible.
- Old, Dispensation. See Mosaic Dispensation.
- Old, Scriptures, IV. 694—history of the text, 695; XIX. 834—formation of the canon, IV. 696; completion of, ib.—canonical books of, 697—earliest known sculptors mentioned in, XIX. 846. See Bible.
- Teste (M.), corruption of, X. 228.
- Testi (Fulvio), poetry of, XVIII. 112.
- Testicles, III. 69.
- Testimony, credit due to, IX. 416—value of, XVIII. 590—application of the theory of probability to, ib., 609—argument from, XIX. 124.
- Testu's aerial voyage, II. 178.
- TESTUDO, military device, XXI. 159.
- genus of reptiles, XIX. 17—number of species, XVII. 634—fossil, 153. See Tortoise.
- Tetanocera, genus of insects, IX. 255.
- Tetanops, genus of insects, IX. 252.
- Tetanura, genus of insects, IX. 253.
- Tetanus, a disease, XVII. 700—in animals, XXI. 576.
- TETBURY, English town, XXI. 160.
- Tete, African town, XV. 670; XX. 405.
- Tetens (J. Nicholas), on the calculations of life assurance, XII. 403.
- Têtes-de-pont, IX. 809.
- Tetrabranchiata, order of mollusks, XV. 390—fossil, XVII. 111.
- Tetradymite, mineral, XV. 118.
- Tetragnatha, genus of arachnides, III. 381.
- Tetragonal system of crystallisation, XV. 44—twin crystals in, 52.
- Tetragoniaceæ, nat. order of plants, V. 194.
- Tetragonolepis, genus of fossil fishes, XII. 334; XVII. 126.
- Tetragonopterus, genus of fishes, XII. 246.
- Tetragonurus, genus of fishes, XII. 292.
- Tetramera, section of insects, IX. 136.
- Tetrao, genus of birds, XVI. 791.

TET—THA

- Tetraodon, genus of fishes, XII. 312, 313, 314—poisonous species, XIV. 439; XII. 331.
- electricus, VIII. 577.
- Tetraodontini, sub-family of fishes, XII. 314.
- Tetraphylline, mineral, XV. 101.
- Tetrapneumones, arachnides, III. 377.
- Tetraprostyle, in architecture, III. 513.
- Tetrapterus, genus of fossil fishes, XII. 346.
- Tetrapturus, genus of fishes, XII. 297.
- Tetrarcha, Egyptian deity, XI. 386.
- Tetrarhynchus, genus of entozoa, XXI. 979.
- Tetrascopæ, XIII. 39.
- Tetraspore, in botany, V. 147.
- Tetrastoma, zoophytes, XXI. 980.
- Tetrastoon, in architecture, III. 513.
- Tetrastyle, in architecture, III. 513.
- Tetrix, genus of insects, IX. 160.
- Tettigometra, genus of insects, IX. 169.
- Tettigonia, genus of insects, IX. 170.
- TETUAN, in Morocco, XXI. 160.
- TETZEL, XXI. 160—sale of indulgences by, XII. 378; XIII. 724.
- Teulère's lighthouse reflectors, XIII. 468.
- Teuta, queen of the Illyrians, XII. 364, 455.
- Teuthidæ, family of mollusks, XV. 399.
- Teuthydida, or Teuthyoids, family of fishes, XII. 304.
- Teuthys, family of fossil fishes, XII. 344.
- TEUTONES, XXI. 160—their war with the Romans, XIX. 319; VI. 724.
- Teutonic knights, XIII. 115; XV. 408—in Prussia, XVIII. 648, 676.
- languages, XVII. 528.
- Teviot, river, XIX. 451, 452.
- TEWKESBURY, in Gloucestershire, XXI. 160; X. 682—iron bridge at, XII. 584, 585.
- TEXAS, XXI. 160, 419—wines of, 888—tribes of people belonging to, IX. 347—language of, XIII. 222—proposed separation of, from Coahuila, XIV. 713—asserts its independence, ib.—annexation of, by the United States, XXI. 441.
- TEXEL, island, XXI. 162.
- Textile fibres, XXI. 781, 782—quantities imported, ib.—processes, 783.
- industry, statistics of, XXI. 791—legal regulation of, in factories, 790—growth of the various branches, 792—people employed in, ib.—exports, 793—of France, ib. See Cotton, Flax, Hair, Hemp, Silk, Weaving, Wool and Woollen Manufacture, &c.
- Textures, in physiology, morbid growths and degenerations of, XVII. 690—theory of their degeneration, 696.
- Teyus, genus of reptiles, XIX. 28.
- TEZA, or Taza, town in Morocco, XXI. 162.
- TEZCUCO, or Tezcoco, Mexican town and lake, XXI. 162; XIV. 722, 723.
- Tezozomoc, Mexican king, XIV. 700.
- Thackeray (W. M.), XIX. 283—on Hogarth, XI. 554—on Steele, XX. 673.
- Thaer (Albert), his improvements in agriculture, XVIII. 666.
- Thais, genus of insects, IX. 207.
- Thalamifloræ, sub-class of plants, V. 180.
- Thalamus, in botany, V. 118.
- Thalassicollæ, zoophytes, XXI. 1007.
- Thalassorhinus, genus of fishes, XII. 324.
- Thalberg (Mr), on piano-fortes, XVII. 704.
- Thaler, German coin, X. 591.
- THALES, XXI. 162—his philosophy, III. 538—astronomy, 787—mathematical knowledge, X. 497—acquainted with the electrical properties of amber, VIII. 523.
- THALIA, XXI. 162; XV. 699—planet, IV. 91.
- Thallite, mineral, XV. 85.
- Thallogeneæ, sub-class of plants, V. 217.
- Thallogens, plants, V. 80, 142.
- Thallus of lichens, V. 146.
- THAME, town in Oxfordshire, XXI. 162.
- THAMES, river, XXI. 162; VIII. 716; XIII. 661; XIV. 807; XVII. 647—source of, X. 680—sailing of the Dutch fleet up the, V. 423—navigation of, XIII. 661—bridges over, XIV. 808—

THA—THE

mineral matters in its waters, XV. 143
—sanitary condition of, XIX. 606.
Thames Tunnel, XIII. 676; I. 879—shield,
ib.—completion of, 880; V. 696.
Thamnophilus, genus of birds, XVI. 748.
THANE, XXI. 163.
THANET (Isle of), XXI. 163; XIII. 66, 67
—Thanet Sands, XV. 212.
THANN, town in France, XXI. 163.
THAPSACUS, XXI. 163.
Thapsus, battle of, XIX. 326.
Tharymbas I. and II., kings of Epirus,
IX. 217.
THASOS, island, XXI. 163.
Thatching of stacks, II. 314.
Thattha, or Tatta, town in Oudh, XX. 305.
Thaumatrope, optical instrument, XVI.
697.
Thavies' Inn, XII. 385.
THAXTED, town in Essex, XXI. 163.
The, article, X. 750.
Theætetus, geometer, X. 499.
THEATINES, religious order, XXI. 163.
THEATRE, XXI. 164—ancient Greek the-
atres, III. 442, 463; VIII. 135; IV.
164—Roman, III. 470; XIX. 359—ac-
clamations and applauders in ancient
theatres, II. 77; III. 325—O. P. riots,
XIII. 61—attendance of Scotch clergy-
men at, XIX. 230—monopoly of the
two great London theatres, VIII. 168—
theatres in London, XIII. 675—Paris,
XVII. 284—Globe Theatre, XX. 75, 85—
theatres of Pompeii, XVIII. 287. See
Drama, Actor, Dublin, and other capi-
tal cities.
Thebaic version of the Scriptures, IV. 700;
XIX. 839.
THEBES, in ancient Greece, XXI. 176—
army of, III. 628—taken and destroyed
by Alexander, XIII. 766—war with
Sparta, XX. 501, 502.
—in Egypt, XXI. 179—ruins of, III.
435, 436, 437; VIII. 506.
Thebith Ben Korah, III. 794.
Theca, in botany, V. 142.
Thecadactyli, reptiles, XIX. 36.
Thecididiæ, family of mollusks, XV. 338.
Thecidium, genus of mollusks, XV. 338—
fossil, XVII. 105.
Thecodontia, fossil reptiles, XVII. 140.
Thecodontosaurus, fossil reptile, XVII. 140.
Thecosimilia, fossil corals, XVII. 97.
Thecosomata, order of mollusks, XV. 358.
Theft, morbid propensity to, XIV. 532.
Theine, IX. 757—in tea, XXI. 82, 83—in
holly, V. 199.
Theism, XXI. 185.
THEISS, river, XXI. 179; XII. 10.
Thelphusa, genus of crustacea, VII. 541.
Thelyphonus, genus of arachnides, III.
384.
Themis, planet, IV. 91.
Themison, XIV. 454.
THEMISTIUS, Greek orator, XXI. 179.
THEMISTOCLES, XXI. 179; IV. 199, 200,
201; III. 530—his expedition against
Andros, 139—Athens fortified by, IV.
460.
THEMSCHÉ, town in Belgium, XXI. 179.
Thenard on white-lead, XIII. 302.
Thenardite, mineral, XV. 99.
THEOBALD (Lewis), XXI. 179.
Theocracy, I. 470, 479; XV. 659.
THEOCRITUS, XXI. 180—poetry of, XVIII.
103—Warton's edition of his works,
XXI. 735.
Theodobert, X. 5.
THEODOLITE, XXI. 180—in surveying, 331,
347—theodolite-book, 348.
Theodore of Mopsuestia, XII. 728; XXI.
180.
THEODORETUS, XXI. 180.
Theodoric, king of Metz, X. 4.
—king of the Ostrogoths, XII. 640;
VII. 312; XX. 460—palace and mauso-
leum of, XVIII. 812.
Theodorus, geometrician, XVII. 786
—sculptor, XIX. 853.
THEODOSIA, XXI. 180. See Kaffa.
Theodosian code, VI. 742; XVII. 214.
Theodosius, ancient mathematician, X. 501.
—Roman emperor, XXI. 180; VII.

THE—THE

310—reproved by St Ambrose, II.
664—Antioch oppressed by, III. 274—
roof of his tomb at Ravenna, XIX. 390.
Theodota, XX. 374.
Theodotion, his version of the Scriptures,
IV. 700; XIX. 840.
THEOGNIS, Greek poet, XXI. 180.
Theological education, in the Established
and Free Churches of Scotland, XVIII.
494, 495—in the United Presbyterian
Church, 500.
THEOLOGY, XXI. 181—rational, XIV. 606
—the real in, 619—Schleiermacher on,
XIX. 726—philology the key-stone of,
XVII. 541—in Germany, X. 593. See
Religion, Jesus, Christ, &c.
—(Natural), XXI. 181, 182—Paley
on, XVII. 204—Socrates' admiration of,
XX. 389, 403—Epicurean errors of La-
marck, III. 189, n.—wonders disclosed
by the microscope, 197.
Theon of Alexandria, X. 502.
—Greek painter, XVII. 57.
Theopathic mystics, XV. 755.
Theophanes, XIX. 469.
Theophany, XXI. 186.
Theophilus, anatomist, II. 754.
—bishop of Antioch, IX. 492.
—bishop of Alexandria, VII. 310.
—one of the compilers of Justinian's
Institutes, VI. 746.
THEOPHRASTUS, XXI. 220; III. 535, 536
—his treatise on plants ascribed to
Aristotle, 550, n. 2—on astronomy, 789
—on geometry, X. 500.
Theophylact, religious dramas introduced
by, VIII. 143.
THEOPOMPUS, XXI. 220.
THEOREM, XXI. 220; X. 508.
THEORY, XXI. 220.
THEOSOPHISTS, XXI. 220; XV. 755.
Theramenes, IV. 207, 209.
THERAPEUTÆ, XXI. 220.
Therapeutics, XIV. 463.
Therapon, genus of fishes, XII. 277.
Theraponidæ, family of fishes, XII. 276,
277.
THERESIENSTADT, town in Hungary, XXI.
220.
Thereva, genus of insects, IX. 232.
Theridion, genus of arachnides, III. 380.
Therina, genus of insects, IX. 257.
Thermal springs, XVII. 601.
Thermo-dynamics, principles of, XX. 617
—laws of, 618.
Thermo-electricity, discovery of, I. 976;
XXI. 638, 649—conductibility of metals
for, 652—currents of, ib.—piles of, ib.;
Mellon's pile of, ib.—chemical effect of,
ib.—electric spark from the, 653—rota-
tions of, ib.—Peltier's piners of, ib.—
its relation to molecular structure, 655.
Thermo-electrometer, VIII. 590.
Thermo-multiplier, I. 955; XX. 221.
THERMOMETER, XXI. 220; XI. 260—inven-
tion of, I. 756; IV. 456; X. 375, n.—
consequences of the invention, I. 760—
the differential thermometer used to
ascertain the mode of the propagation
of heat among various bodies, 767—
height of, in connection with atmo-
spherical refraction, IV. 148—successive
improvements on, 457—application of,
in barometrical measurements, 464—
oil thermometer, 457—different kinds
of, ib.—chronometrical, VII. 30—adjust-
ment of, VI. 352—its depression from
saline mixtures, VII. 104—its use in
meteorology, XIV. 645 *et seq.*—register
thermometers, I. 763—Six's, XI. 724—
Traill's IV. 460—metallic, I. 763—elec-
trical air-thermometer, VIII. 626.
—(Differential). See Differential Ther-
mometer.
Thermonatrite, mineral, XV. 98.
THERMOPYLÆ, XXI. 225; XI. 12—defended
by Leonidas, XX. 500—amphictyony of,
II. 727.
Thermoscope, I. 941; XIV. 484; XXI. 232.
Thesium, or temple of Theseus, at Athens,
IV. 162—dimensions of, 167, n. 1.
THESEUS, XXI. 225—reign of, IV. 192—
dance instituted by, VII. 646.

THE—THO

Thesiger (Sir Frederick), V. 581.
THESPIAS, XXI. 225—the Greek drama im-
proved by, VIII. 134*.
THESSALONIANS (Epistles to the), XXI.
225.
THESSALONICA, XXI. 226; XIX. 581.
Thessalus, physician, XIV. 454.
THESSALY, XX. 226; XI. 12—its affairs
settled by Philip, XIII. 764—gold from,
XV. 230—coinage of, XVI. 370.
THETFORD, in Norfolk, XXI. 226.
Thethys, genus of mollusks, XV. 371.
THETIS, wife of Oceanus, XXI. 226.
—planet, IV. 91.
—genus of mollusks, XV. 350, 371—
fossil, XVII. 108.
THEURGY, XXI. 227; XV. 755.
Thevart (Abraham), his improvements in
glass-making, X. 659.
THIAN-SHAN, Asiatic mountains, XXI. 227;
XVII. 599.
THIBAUT (A. F. Justus), jurist, XXI. 227.
Thibet. See Tibet.
Thiblé (Madame), first female aéronaut,
II. 177.
Thiebaut (M.), his classification of books,
IV. 715.
Thiel, Swiss river, XX. 888.
THIELT, town in Belgium, XXI. 227.
Thierry, X. 4, 5.
THIERRY (J. N. Augustin), historian, XXI.
227; XIX. 574.
Thiers (M.), X. 196 *et seq.*—his ministry,
212—on the Jesuits in France, 223—his
work on property, XVIII. 228, n. 4.
—town in France, XXI. 227.
Thigh, muscles of the, III. 38.
Thigh-bone, in man, III. 34—in the mam-
malia, 82—birds, 86.
Thing, Norwegian Assembly, XVI. 316,
317.
Thinning woods, XXI. 273.
THIONVILLE, town in France, XXI. 227.
Thirlwall, his History of Greece, IV. 218.
THIRSK, in Yorkshire, XXI. 227.
Thirst, XVII. 658.
Thirty Years' War, IV. 303; XVIII. 649.
Thirty-nine Articles, petition against sub-
scription to, V. 474.
THISTLE, order of the, XXI. 228—British,
XI. 340; XIII. 119—French, 120—
Russian, ib.
Thistles of Buenos Ayres, XVII. 776—of
the Pampas, 624.
Thistlewood (Arthur), his plot, V. 627—
execution, 628.
Tholobate, in architecture, III. 513.
Tholus, or Tholos, in architecture, III. 513.
THOMAS, of Erceldoune, XXI. 228.
—(George), military adventurer, IV.
509, 691; XII. 50.
—(M.), his Eloge on Descartes, I.
243, 247.
—(Mr), on Indian coins, XVI. 390, 391.
—(Sr), island, XXI. 228.
—(Sr), island in the Gulf of Guinea,
XXI. 229.
Thomas's (St), Hospital, XIII. 673.
THOMASIVS, or Thomas (Christian), XXI.
229—his attack on the doctrine of
witchcraft, III. 313.
THOMASTOWN, in Ireland, XXI. 229.
Thomisus, genus of arachnides, III. 382.
THOMPSON (Sir Benjamin), Count Rumford,
XXI. 229; I. 940, 941—on the impor-
tance of cookery, VIII. 25—on flannel
clothing, IX. 654—on gunnery, XI. 121,
122, 123—his photometer, XIII. 455;
X. 428—importance of his opinions on
the nature of heat, I. 941—on heat, XI.
260, 261 *et seq.*; I. 940, 941, 942—Royal
Institution established by, 941—prize
given by, ib.
—(J. and G.), of Glasgow, iron
screw-ship built by, XX. 200.
—(J. Vaughan), on the metamor-
phosis of crustacea, VII. 539, 544; of a
species of barnacle, XV. 319—on
echinoderms, XXI. 995.
—(WILLIAM), naturalist, XXI. 232—
on the genus hyperoodon, XVI. 443
—his work on the Natural History of
Ireland, 829.

THO—THO

Thompson's rope-machinery, XIX. 409.
Thomson (Adam, D.D.), his exertions to
destroy the monopoly of Bible-printing,
IV. 704.
—(ANDREW, D.D.), XXI. 232—on the
Apocrypha question, IV. 703.
—(ANTHONY TODD), physician, XXI.
233.
—(Dr), of Edinburgh, pointed out
the fact of second attacks of small-pox,
&c., in 1818, XXI. 501.
—(Dr), his Introduction to Meteorolo-
gy, XIV. 658.
—(JAMES), poet, XXI. 234—dramatic
works of, VIII. 164—his poetry, XVIII.
124—his defective manner of reading,
XXI. 172—his description of the spider,
III. 375.
—(Mr), on logic, XIII. 585 n., 607
n., *et seq.*—his Laws of Thought, 585, n.
—(Mr), on the source of the Jordan,
XVII. 185.
—(Mr), his report on agricultural
implements, II. 285.
—(Dr R. Dundas), on the loss of
barley in malting, V. 323.
—(THOMAS), of Glasgow, chemist,
XXI. 236—on sal-ammoniac, II. 719—
on barley, V. 320; its loss in malting,
323—his article on dyeing, in this work,
VIII. 272—on the specific gravity of
sea-water, IV. 403.
—(Dr Thomas), on the Himalayan
glaciers, X. 634—on the dhuns or val-
leys of the Himalayas, XI. 438; their
geology, 443.
—(Prof. William), on electrical im-
ages VIII. 534; I. 990—on telegraphic
conductors, XXI. 98.
Thomsonite, mineral, XV. 75.
Thon (T.), his work on insects, IX. 16.
THONON, town in Savoy, XXI. 236.
THOR, XXI. 236.
Thoracic duct, II. 761, 803; III. 63.
—fishes, their fins and pelvis, III.
90, 91.
Thorax, human, Galen's description of, II.
753—regions of, III. 1—bones, 9—
muscles, 38—nerves, 57—its structure
with reference to breathing, XVIII. 652
—wounds in, XIV. 431.
—in mammalia, III. 76—reptiles, 87
—insects, IX. 37.
THORDA, in Transylvania, XXI. 236.
THORILD, Swedish author, XXI. 236; XIX.
699.
Thorina, XV. 65.
Thorite, mineral, XV. 90.
Thorium, VI. 488.
Thorlacius, two Danish authors, VII. 750.
Thorley (Mr), his hive, III. 295—on the
management of hives, IV. 588.
THORN, town in Prussia, XXI. 236.
Thorn-apple, V. 202.
Thorn-hedges, II. 269.
Thornback, fish, XII. 326; IX. 763; XVII.
119.
THORNBURY, in Gloucestershire, XXI. 236.
THORNE, in Yorkshire, XXI. 236.
—(Robert), on a north polar passage,
XVIII. 163.
THORNEY, in Cambridgeshire, XXI. 236.
Thorneycroft's boiler-plate shears, XII.
562.
THORNHILL (Sir James), painter, XXI. 236;
XVII. 77—daughter of, married to
Hogarth, XI. 554—interior of the dome
of St Paul's painted by, XIII. 670.
—in Dumfriesshire, XXI. 237.
—village in Yorkshire, XXI. 237.
Thorns of plants, V. 79.
Thornthwaite (Mr), on the collodion pro-
cess in photography, XVII. 547.
THOROUGH BASS, in music, XXI. 237.
—Pin, XXI. 559.
Thorshavn, in the Faroe Islands, IX.
484.
THORWALDSEN (Albert), sculptor, XXI.
237; XIX. 864, 696—museum of, VII.
347.
Thoth, Egyptian deity, VIII. 437; XI.
383; XV. 760. See Hermes.
Thothmes, Egyptian kings, VIII. 460.

THO—THU

- Thorpe (Chief-Justice), VIII. 772.
 THOU (J. Auguste De), historian, XXI. 239—his Table-talk, II. 738.
 Thouars (Dupeit), admiral, X. 217, 221.
 Thought, XIV. 560—form and matter of, 586—operations of, ib.—discursive, XIII. 567, 570, 571.
 Thourer (M.), on mesmerism, XX. 419.
 THOUROUT, in Belgium, XXI. 239.
 THRACE, XXI. 239—gold produced in, XV. 230—monarchy of, 414—coins, XVI. 368.
 Thrale (Henry), his intimacy with Dr Johnson, XII. 800.
 — (Mrs.). See Piozzi.
 THRAPSTON, in Northampton, XXI. 239.
 Thrasher, in zoology, XIV. 226.
 THRASHING, XXI. 240—by steam, II. 264; by flail, IX. 73—thrashing-machine, II. 282; portable, 281—invention of, 262; improved by Meikle, 282.
 Thrasybulus, IV. 209 *et seq.*
 Thrasyllus, architecture of the choragic monument of, III. 462.
 Thrasymentus (Lake), XVII. 242, 474—battle of, VI. 294; XIX. 310. See Perugia, lake of.
 Thraulite, mineral, XV. 90.
 Thread, spinning of, XX. 508, 511—gold-thread, X. 703. See Weaving, Fibre, Silk, Cotton, and Woollen Manufactures.
 — lace, XIII. 142.
 — of the spider, III. 376. See Spider.
 Three Bodies, problem of the, I. 828; IV. 105; III. 809.
 — RIVERS, town in Canada, XXI. 240.
 Thresher, fish, XII. 322.
 Thrips, genus of insects, IX. 171.
 Thrissonotus, genus of fossil fishes, XII. 336; XVII. 126.
 Thrissops, genus of fossil fishes, XII. 336.
 Thrombolite, mineral, XV. 103.
 Thrombus, in animals, XXI. 574.
 Throstle, VII. 444; XX. 511.
 Throttle valve, XX. 589, 599, 653.
 Throwing of silk, XX. 281—throwing-machine, 284.
 Throwster, XX. 281.
 Thrush, a disease of horses, XXI. 562.
 — bird, XVI. 751—ant, 753—glossy, 752—missel, 751, 752—pagoda, 754—song, 751.
 Thuanus (J. Augustus). See Thou.
 THUCYDIDES, historian, XXI. 240—on the demoralising effects of a pestilence at Athens, I. 460, 461—his account of an eruption of Etna, II. 193.
 Thugs of India, XI. 466.
 Thule, X. 462.
 Thulite, mineral, XV. 85.
 Thumb, opposition of fingers and, III. 41—in the quadrumanus, XIV. 136. See Fingers.
 THÜMMEL (M. August Von), German author, XXI. 241.
 Thummim, XVI. 699.
 THUN, lake of, XXI. 241; XX. 889—its temperature, VI. 777.
 — Swiss town, XXI. 241.
 THUNBERG (Carl Petter), botanist, XXI. 241—on the Japanese, XII. 690—his entomological works, IX. 8.
 THUNDER, XXI. 242; XIV. 662—sound of, II. 107—an electrical phenomenon, VIII. 527, 582—cause of the rolling of, 583—distance, ib.
 — steam screw-ship, machinery of, XX. 668.
 Thunder-bolt, VIII. 583.
 Thunder-rods, VIII. 608.
 Thunder-storms, VII. 39; XIV. 663—distribution of, XVII. 615.
 Thundering Legion, III. 280, *n.*
 Thur, Swiss river, XX. 888; XXI. 242.
 THURGAU, Swiss canton, XXI. 242; XX. 882.
 THURI, or Thurium, Greek city, XXI. 242.
 Thuringia, in Germany, porcelain factory of, XVIII. 436.
 THURINGIAN FOREST, XXI. 242.
 THURLES, Irish town, XXI. 242, 288.
 THURLOW (Edward), Lord, XXI. 242; V.

THU—TID

- 515—removed from office, 548—Cowper's intimacy with, VII. 471.
 Thursday, I. 458, *n.*; VI. 75.
 THURSO, town in Caithness, XXI. 243—great haul of salmon at, IX. 589, *n.* 2.
 Thuthmosis, Egyptian king, XI. 386.
 Thyellina, genus of fossil fishes, XII. 342.
 Thylacinus, genus of mammalia, XIV. 175—teeth of, XVI. 447.
 Thylæoleo carnifex, XVII. 175—teeth of, XVI. 447.
 Thymalus, genus of fishes, XII. 245, 244.
 — genus of insects, IX. 114.
 Thyme, plant, V. 202; XI. 745—oil of, XVI. 496.
 Thymelæaceæ, nat. order of plants, V. 205.
 Thymætes, IV. 193.
 Thynnus, genus of fishes, XII. 296—fossil, 345.
 — genus of insects, IX. 195.
 Thyonidae, zoophytes, XXI. 986.
 Thyreophora, genus of insects, IX. 254.
 Thyris, genus of insects, IX. 210.
 Thyroid cartilage, III. 50.
 Thyrstites, genus of fishes, XII. 296.
 Thyrsoideinae, sub-family of fishes, XII. 231.
 Thyrsoidea, genus of fishes, XII. 231.
 Thyrus, in botany, V. 115.
 Thysanoura, order of insects, IX. 26, 260.
 Tibaldi, painter, XVII. 73, 74.
 Tibbermore, battle of, V. 406.
 Tibbus, African people, II. 219, 226.
 TIBER, river, XXI. 243; XII. 637; XVII. 240, 242; XIX. 294—source of, XXI. 393.
 Tiberias, town, X. 374; XVII. 186—Jewish patriarchate of, XII. 775—battle of, VIII. 481.
 — lake of. See Galilee, sea of.
 TIBERIUS (C. Nero Caesar), Roman emperor, XXI. 243—reign of, XIX. 334—his treatment of Sejanus, XX. 36.
 TIBET, XXI. 245; III. 731; XI. 439—climate, III. 736—language, XIII. 206—plateau of, X. 483; XVII. 598—height of mountains, 643—goat wool, XXI. 906.
 — (Little). See Bultli.
 — (Middle), XIII. 149.
 Tibia, or shin-bone, in man, III. 35, 37—in the mammalia, 82—birds, 86—reptiles, 88.
 TIBULLUS (Albius), Roman poet, XXI. 247; XVIII. 105.
 TIBUR, in Latium, XXI. 248, 292.
 Tiburtine road, XIX. 228.
 TICAO Isle, XXI. 248.
 TICHFIELD, or Titchfield, in Hampshire, XXI. 248.
 Tichodroma genus of birds, XVI. 768.
 Ticino, river, XXI. 248; XX. 888.
 — Swiss canton, XXI. 248; XX. 882.
 Ticius, battle of, VI. 294; XIX. 310.
 Tick in sheep, XXI. 579.
 TICKELL (Thomas), English poet, XXI. 249.
 Ticket-of-leave system, for convicts, XVIII. 579—home tickets of leave, 580.
 Tickets, railway, arrangements for issuing, XVIII. 767; for collecting, 769.
 TIDES, XXI. 249; I. 778, 779; XVII. 580—explanation of, by Newton, I. 679—discussions respecting the earth's figure led to an examination of the theory of, 778—theory of, 816—three classes of, 817—laws of, 818—Airy on, ib.—Kepler on the cause of, III. 800—Laplace on, 812—singular phenomena of, in the Forth, VI. 749—in reference to navigation, XVI. 50—tide-currents, 66—tide basins, 79—to find the height of, 51—effect of, on waves, XI. 217—abrasion by, XVII. 585—in the Polar seas, XVIII. 176—in the Shannon, XX. 92—peculiarity in, at Southampton, 453—in the Firth of Forth, IX. 793—Mediterranean, XIV. 470—scarcely perceptible in the Baltic, IV. 403—tide-wave, XVI. 64; propagation of, 74—length to which rivers are affected by, 87.
 TIDESWELL, in Derbyshire, XXI. 264.
 TIDOR, or Tidore, island, XXI. 264.

TIE—TIM

- Tie-beam, strain on, VI. 256—in carpentry, 373; XIX. 383—level tie-beams in roofs, 393.
 TIECK (C. Friedrich), sculptor, XXI. 264.
 — (LUDWIG), poet, XXI. 264; XVIII. 119—romances of, XIX. 291, 292.
 TIEDEMANN (Dietrich), XXI. 265.
 — on the lymphatics, II. 804—on zoophytes, XXI. 992, 983—on the phosphorescence of the medusæ, 998.
 Tiedemannia, genus of mollusks, XV. 361.
 Tiemannite, mineral, XV. 117.
 TIEN-TSIN, Chinese town, XXI. 265.
 Tierney (Mr), his opposition to Pitt's navy bill, V. 562—his duel with Pitt, 563—on the expedition to Holland, 573—his motion for an inquiry into the state of the nation, 623.
 TIERRA DEL FUEGO, XXI. 265.
 Tiers état, X. 45, 46, 49 *et seq.*
 — parti, X. 210.
 TIFLIS, XXI. 265. See Teflis.
 Tiger, XIV. 169; XVII. 632—of Asia, III. 739; Assam, 764; Hindustan, XI. 211; Java, XII. 704; Persia, XVII. 423; Sindh, XX. 304; Sumatra, 804—tiger-shooting, 211.
 Tiger-moth, IX. 214.
 Tight, meaning of the word, VIII. 12.
 Tiglath-pileser, III. 778.
 Tigny (F. M. G. de), his work on insects, IX. 21.
 Tigranes, king of Armenia, III. 615; XV. 284.
 Tigré, in Abyssinia, II. 56.
 TIGRIS, river, XXI. 265; IX. 376; XVII. 607, 647.
 TILBURY, in Essex, XXI. 266.
 Tile-ore, XV. 112.
 Tileaceæ, nat. order of plants, V. 185.
 Tiles, for paving, V. 735—roofing, ib.; XIX. 374—preparation of clay for, XVIII. 439—enamelled, 431—encaustic, 441—pan-tiles, XIX. 374—manufacture of, in Holland, XI. 583—for drains, VIII. 133.
 Tilesius on the music of savages, XV. 716.
 Tilestone, XV. 198.
 Tilkerodite, mineral, XV. 117.
 Tillage, II. 286. See Ploughing.
 Tillet, or Tillius (Jean du), his edition of the Theodosian Code, VI. 744.
 Tillet's patent grate, XX. 253.
 Tilley (Mr), his water-pressure blowpipe for glass-blowers, IV. 793.
 TILlicOUNTRY, in Clackmannanshire, XXI. 226—woollen factories at, VI. 750.
 Tillissareh, in Fezzan, sculptures at, IX. 530.
 TILLOTSON (John), archbishop, XXI. 266.
 Tilly (Count), his military operations against Gustavus Adolphus, XX. 849—defeated and killed, 850—Heidelberg plundered by, II. 633; XI. 285.
 TILSIT, in Prussia, XXI. 266—treaty of, X. 147; XIX. 493; V. 602.
 Timanthes, paintings of, XVII. 54.
 Timarcha, genus of insects, IX. 150.
 TIMBER, XXI. 267—anciently the principal material of houses, III. 433—sawing of, V. 754—in construction, VII. 322—destruction of, by the Limnoria terebrans, 542; XI. 224—dry rot in, VIII. 76, 77, 206; XVI. 98, 99—common rot in, VIII. 207—seasoning of, 209; XX. 168, 169—winter-felled, VIII. 210—effects of its immersion in sand, earth, or water, 211—its impregnation with foreign substances, 212—Pliny on the preservation of, ib.—examples of long duration, 213—imports of, into the United Kingdom, 735—supply of, for the navy, XVI. 100; quantity required, 101—exports of, from Norway, 328; from Quebec, in 1854, XVIII. 726; from Canada, VI. 150—in ship-building, XX. 166—different qualities of woods, ib.—means of preserving, 167—seasons of felling, 170—strength of, 171, 172—weight, 173—timbers of a house, V. 746 *et seq.*; of a ship, XX. 184. See Building, Carpentry, Joinery, Planting, Strength of Materials.

TIM—TIP

- TIMBUCTOO, in Africa, XXI. 280; II. 228; X. 476—visited by Major Laing, 477—Dr Barth's residence at, 479.
 TIME, XXI. 281—views of philosophers regarding the nature of, I. 142, *n.* 1; XIV. 562—measure of, IV. 22—equation of, ib., 133—mean and true, 23—comparison of mean and sidereal time, 24—different kinds of, VII. 4—characters of abbreviations of, V. 419—method of computing, among the Druids, VIII. 186—in relation to navigation, XVI. 34—mean and apparent solar, 38—sidereal, 35, 39—mode of finding mean time, 45—assymbolised in hieroglyphics, XI. 401—in phrenology, XVII. 563.
 — in music, XXI. 281; XV. 717.
 Time-ball, VII. 27.
 Times newspaper, XVI. 187—its proceedings in reference to the continental forgeries of 1840, 188—steam-printing press of, ib.—growth and circulation of, ib.—its correspondent's account of the battle of Alma, XIX. 502; of the battle of Balaklava, 505; of Inkermann, 506—Stoddart's writings in, XX. 707—establishment and circulation of, XXI. 694.
 Timia, genus of insects, IX. 253.
 Timmani language, XIII. 226.
 Timmerman (Col.), on artillery, III. 694, 700.
 Timocharis on astronomy, III. 790.
 TIMOLEON, XXI. 281—his military exploits in Sicily, VI. 283; XX. 900.
 Timomachus, Greek painter, XVII. 57.
 TIMON, XXI. 281—scepticism of, XIX. 707.
 TIMOR, island, XXI. 281—serpents of, XIX. 54.
 TIMOTHEUS, Athenian general, XXI. 282.
 TIMOTHY, XXI. 282—epistles to, ib.
 TIMUR, or Tamerlane, XXI. 282; VIII. 485, 486—his treatise on war, III. 620, *n.* 1—conquests of, 746; XVII. 438—his defeat and treatment of Bajazet, VII. 320; XXI. 368; IV. 376—his invasion of Syria, XX. 911.
 TIN, XXI. 283; XV. 66, 114—wood and stream tin, 109—Phœnician trade with Britain for, V. 376—its compounds with copper, 277; VI. 497—use of its oxides as mordants, VIII. 279, 290, 317—its chlorides used in calico-printing, 316, 317—specific gravity of, XII. 88—beating of, into thin leaves, X. 703—in galena, XIII. 299—imports of, XV. 241—dressing the ores of, ib.—distribution of, XVII. 621—its muriate poisonous, XIV. 434—cohesion of, XX. 757.
 Tin-mines, in Devonshire, VII. 763—Cornwall, 407; XV. 240, 241—England, VIII. 276—Europe, IX. 387.
 Tin-ore, XV. 109—distribution of, XVII. 621.
 Tin-pyrites, XV. 121—tin-stones, 219.
 Tinamous, birds, XVI. 792.
 Tinamus, genus of birds, XVI. 792.
 Tinca, genus of fishes, XII. 256, 257—fossil, 346.
 Tinchebrai, battle of, VIII. 670.
 Tinctures, in heraldry, XI. 324.
 TINDAL (Matthew), XXI. 283—his legacy to Eustace Budgell, V. 725.
 — (NICHOLAS), XXI. 283.
 Tinea, genus of insects, IX. 218.
 Tineites, family of insects, IX. 217.
 TING-HAE, XXI. 283.
 Tingis, genus of insects, IX. 163.
 Tinkal, mineral, XV. 98.
 TINNEVELLY, in India, XXI. 283.
 TINTERN, XXI. 284—Abbey, XV. 499; in Wexford, XXI. 848.
 TINTORETTO, painter, XXI. 284; III. 710; XVII. 71.
 Tinville (Fouquier), X. 89, 94.
 Tiphia, genus of insects, IX. 195.
 TIPPERAH, in Bengal, XXI. 284.
 TIPPERARY, XXI. 284—population, XII. 509—agricultural statistics, 515, 517—joint-stock bank of, XV. 488.
 — town of, XXI. 288.
 Tippoo Saib, XI. 492 *et seq.*; XXI. 818—war with, V. 539, 541—fall of, 567—defeat and death, XI. 502—his sons sur-

TIP—TOB

rendered as hostages to Lord Cornwallis, 500—his library, XIII. 431.
TIPTON, in Staffordshire, XXI. 288.
Tipula, genus of insects, IX. 227.
Tipularia, family of insects, IX. 224.
TIRABOSCHI (Girolamo), XXI. 288.
TIRAFIAS, Spanish dance-tunes, XXI. 288.
TIRRE, Scotch island, XXI. 288—marble of, III. 526.
Tirhakah, Egyptian king, VIII. 464.
TIRHOOT, in India, XXI. 289.
TIRLEMONT, in Belgium, XXI. 289—battle of, V. 449—agricultural school at, IV. 622.
TIRNOVA, town in Turkey, XXI. 289.
TIROLESE, waltz-tune, XXI. 289.
Tirolite, mineral, XV. 103.
Tiroon, in Borneo, V. 47.
Tirso de Molina. See Tellez.
TIRYNS, ancient Grecian city, XXI. 289.
TISCHBEIN (John Henry), painter, XXI. 289.
 — (J. H. WILLIAM), painter, XXI. 289.
Tischendorf (Dr), on the probable existence of old MSS. in Constantinople, XIII. 386—fragments of the Bible published by, XVII. 209—on palimpsests, 210—his edition of the New Testament, XIX. 837—his rules for determining the various readings of the Scriptures, 841.
Tisdale (Captain), his practice with the American rifle, XI. 101.
Tissaphernes, IV. 207.
Tissues of the human body, II. 778, 783—filamentous or cellular, 765, 786—adipose, 787—arterial, 789—venous, 792—erectile, 799—nervous, 806—muscular, 821—particular tissues, 818—dental, XVI. 410 *et seq.*—fibre tissues, XVII. 652—molecule tissues, 649—cell, 650—tube, 653—mode in which they are nourished, 663.
 — of animals, III. 171.
 — of plants, V. 65—cellular, 66—vascular, 69—contents of, 72—woody, 69.
Titanic acid, VI. 494.
Titanitic iron, XV. 109.
Titanite, mineral, XV. 110.
Titanium, VI. 494; XV. 67.
TITANS, XXI. 289.
TITHES, XXI. 290—in England, VIII. 744—Scotland, XIX. 750—Ireland, XII. 531—Selden on, XX. 37—incidence of, XXI. 63—injurious operation of, *ib.*, 64—commutation of, 64.
TITHING, XXI. 290.
Tithous, XI. 387.
TITIAN, painter, XXI. 290; III. 710, 716; XVII. 56, 57, 70—his estimation of the genius of Corregio, III. 368.
TITICACA (Lake), XXI. 291; II. 668; III. 129; IV. 822.
TITLE, XXI. 291.
Titmice, birds, XVI. 759.
TITUMEN, town in Siberia, XXI. 292.
Titus (Colonel), his work entitled *Killing no Murder*, V. 417.
 — companion of St Paul, XXI. 291.
 — VESPASIANUS, Roman emperor, XXI. 292; XIX. 340—arch of, III. 487—Jerusalem taken and destroyed by, XII. 774; XVII. 194.
TIVERTON, in Devonshire, XXI. 292; VII. 764—lace manufacture at, *ib.*
TRIVOLI, XXI. 292—temple of Vesta at, III. 444, 474, 486—villa of Adrian near, 470.
Tizard (Mr), on brewing, V. 319, 320—his plan of mashing, 325, 326—his objection to boiling wort, 327—on porter-brewing, 331.
Trascala, Mexican state, XIV. 725, 718.
Tlatelolco, XIV. 701.
TLEMECEN, or Tlemsen, African town, XXI. 292.
Tmesisternus, genus of insects, IX. 145.
Toads, XVII. 634; XIX. 79—embedded in wood and stone, 79, 80—their power of fasting, III. 180—vessels in the lungs of, II. 797.
Toadstone, XV. 187, 245.
TOBACCO, XXI. 293—plant, V. 201, 202—

TOB—TON

flower of, 124, 201—of New South Wales, IV. 280; Canada, VI. 147; Lakatia, XIII. 246; France, X. 247—Greek, XI. 16—Indian, 453—Mexican, XIV. 717—of Virginia, XXI. 598—value of exports from United States, 426—proposal for warehousing, V. 457—management of the duty on, transferred to the Excise, 534—license paid by manufacturers of, XIII. 435—exorbitant duty on, XXI. 61—narcotic properties of, XIV. 438.
TOBAGO, island, XXI. 297—culture of the bread-fruit in, V. 301.
TOBARRA, town in Spain, XXI. 297.
TOBERMORY, in Mull, XXI. 297.
Tobol, Siberian river, XXI. 298.
TOBOLSK, in Siberia, XXI. 297; XIX. 521—climate, XIV. 674.
Tocantins, river, XVII. 647.
Tocqueville (C. A. M. Clerel de), XXI. 298—on the moral condition of France, in 1848, X. 232—on American penitentiaries, XVIII. 571.
Tocuyo, river, XXI. 536.
Todawars, XI. 467.
Todd (Col.), on feudalism in Asia, IX. 521—on the Rajpoots, XI. 164, 165, 166—on the landholders of Rajast'han, 512, 514—on Hindu literature, 477.
 — (Dr), on senso-motory electricity, XVII. 671.
 — (HENRY JOHN), XXI. 301—notice from his *Life of Cranmer*, VII. 481, 482.
 — (J. T.), on the torpedo, VIII. 573.
 — (R. Bentley), his *Cyclopædia of Anatomy*, II. 74.
Toddy-palm, V. 36; VI. 306—toddy, XX. 798.
Toderies, XI. 467.
Todleben (General), XIX. 507.
TODMORDEN, town in Lancashire, XXI. 301.
Todus, genus of birds, XVI. 773.
Toes (human), bones of, III. 36, 37—muscles of, 39.
 — bones of, in quadrupeds, III. 82, 83; XIV. 134—birds, III. 86.
Tofana, a Neapolitan poisoner, III. 328.
Toga, XXI. 301; XVII. 220.
Togrul Beg, III. 774.
TOKAT, town in Turkey, XXI. 301.
TOKAT, town in Hungary, XXI. 301—wine, IV. 314; XII. 17; XXI. 885.
Token, as coin, XVI. 288—in printing, XVIII. 545.
TOLAND (John), XXI. 301.
TOLEDO, in Spain, XXI. 302.
 — town in Ohio, XXI. 302.
Toleration, degree of, among the Romans, XII. 772—favoured by the Independents, 372—Locke on, XIII. 547—the alleged tolerant spirit of paganism disputed, XX. 380.
Tolfa, alum works at, II. 637, 639.
TOLLENS, Dutch author, XXI. 303; XI. 591.
Tolls, first act for collecting, on highways, II. 262.
Tolly (Barclay de), X. 154, 155 *et seq.*
TOLOSA, town in Spain, XXI. 303.
Tolstoy (M.), on the Russian forces in the late Turkish war, III. 648.
Toltecs, or Toltecans, II. 653, 677, 678, 684, 695, 698; XI. 77; XIV. 698, 720, 721.
Toluca, in Mexico, XIV. 723.
TOMASZOW, in Russian Poland, XXI. 303.
Tomato, V. 201.
TOMB, XXI. 303—ancient Roman, III. 473—characters of abbreviations on tombstones, VI. 419—tombs of the kings, in Egypt, VIII. 512—in Persia, XVII. 432.
Tombazite, mineral, XV. 116.
Tomboro, volcanoes of, XVII. 589.
Tometes, genus of fishes, XII. 246.
Tomicus, genus of insects, IX. 142.
Tomkins on Jesus Christ, XXI. 212.
TOMLINE, or Pretymman, XXI. 303. See Pitt (William).
Tomlinson (C.), on ventilation of coal-pits, VII. 123.
TOMSK, in Russia, XXI. 303; XIX. 521.
Tonadillas, Spanish dance-tunes, XXI. 288.

TON—TOR

TONALITY, in music, XXI. 303.
Tone, in music. See Music.
 — (Wolfe), XII. 497, 498, 499.
TONGA ISLANDS, XXI. 303.
Tongataboo, II. 735.
TONGRES, in Belgium, XXI. 303.
Tongue, muscles of the, III. 39—anatomy of, 48—uses of, 49—comparative anatomy of, 100—contraction of the ligaments of, 123—papillæ of, XVII. 677—action of, in sucking, XVIII. 76; in drinking, *ib.*—in the mammalia, XIV. 133—diseases of the, in domestic animals, XXI. 564—of serpents, XIX. 47.
 — or cry of hounds, XI. 769.
Tongueing, in joinery, V. 750.
Tonkin's diving apparatus, VIII. 58.
TONNAGE AND POUNDAGE, XXI. 307.
 — of ships, XXI. 303; XX. 163—of the United States, XXI. 426.
TONNEINS, town in France, XXI. 307.
TONNERRE, in France, XXI. 307, 955.
TONQUIN, XXI. 307; VII. 47—river, XVII. 647.
Tonsils, III. 48, 53.
Tonson (Jacob), VII. 356; XVIII. 328.
TONTINE, XXI. 307—the nominees in tontines, III. 228—government schemes for raising money by, 230.
TOOKE (John Horne), XXI. 307—his etymological riddles deduced from false principles, I. 61—charged with high treason, V. 553—trial and acquittal, 555—in grammar, X. 777 *et seq.*
 — (THOMAS), political economist, XXI. 310.
Toola, in Russia, XIX. 521.
Tooman Bey, VIII. 487.
Toon-wood of India, XI. 444, 454.
Toondras, in Russia, XIX. 515. See *Tundras*.
Tooran Shah, VIII. 483.
Tooth. See *Teeth*.
Toothache-tree, XVII. 762.
Toothwort, plant, V. 203.
Topajoz, river in Brazil, V. 292.
Topaz, X. 447; XV. 88; XVII. 623—its crystallisation, VII. 555, 563—its pyro-electricity, VIII. 559—electrical phenomena produced by its cleavage, 564—optical phenomena of Brazilian, XVI. 663, 690—system of rings in, 652; I. 913—in Brazil, V. 293.
Tope, fish, XII. 322.
Topham (Captain), his account of a meteorolite, XIV. 631.
TOPIARY WORK, in gardening, XXI. 310.
Topical colours, in dyeing, VIII. 316.
Toplady, hymns of, XII. 189.
TÖPLITZ, town in Bohemia, XXI. 311.
Topsails, how to take in, during a gale, XX. 19.
TOPSHAM, in Devonshire, XXI. 311.
Torbanehill gas-coal, VII. 118; XIII. 497.
TORBAY, in Devonshire, XXI. 311.
TORDENSKIOLD (P. Wessel), Dutch admiral, XXI. 312.
TORDESILLAS, town in Spain, XXI. 312.
Torella (G.), on the venereal disease, XX. 817, n. 3.
Torelli, life and character of, I. 697 and n. 4.
Toretto, sculptor, VI. 193.
Torfæus, XIV. 2.
TORGAU, Prussian town, XXI. 312.
Torgoch, angling for, III. 158.
TORIES, XXI. 312—origin of the, V. 387—derivation of the word, 428.
Tornado. See *Whirlwind*, *Cyclone*.
Tornatella, genus of mollusks, XV. 372—fossil, XVII. 111.
TORNEA, in Finland, XXI. 312.
Torneo, river, XIX. 516—in Lapland, XIII. 224.
TORO ARBUCALL, Spanish town, XXI. 312.
TORONTO, in Canada, XXI. 312; VI. 134—climate, 139, 140—increase of population, 144—value of imports, 152—railway system of, 155—meteorological observations at, XIV. 686.
Torpedinidæ, family of fishes, XII. 327, 326.
Torpedo, fish, XII. 326, 327—electricity of,

TOR—TOU

I. 738; VIII. 523, 530, 572; VII. 673; XVII. 636—Mr Cavendish's attempts to imitate its effects by electricity, I. 988; VI. 351—Ingenhousz's experiments on, XII. 380.
Torpedo, genus of fossil fishes, XII. 342.
TOROPETZ, Russian town, XXI. 314.
Torpidity, III. 180. See *Hybernation*.
TORQUAY, in Devonshire, XXI. 314.
Torquemada, inquisitor, XII. 388, 389.
Torre (Della), on the brain, II. 818—on the muscles, 821.
TORRE-DEL-GRECO, XXI. 315.
Torregiano (Pietro). See *Torrigiano*.
TORRENS (Lake), in Australia, XXI. 315.
 — (Mr), on the advantages of coined money, XV. 418.
Torres, Spanish navigator, New Holland seen by, IV. 252; also Papua, 262; and the New Hebrides, 265.
 — NOVAS, town in Portugal, XXI. 315.
 — Straits, IV. 252.
 — VEDRAS, town in Portugal, XXI. 315—lines of, *ib.*; V. 608; IX. 806; XXI. 707, 821, 823.
TORRICELLI (Evangelista), XXI. 315—his invention of the barometer, IV. 450—on hydrodynamics, XII. 70; I. 596—on mechanics, 593—on pneumatics, XVIII. 24, 25.
Torrid zone, X. 483.
TORRIGIANO, sculptor, XXI. 316; XIX. 863, 865—his tomb of Henry VII., III. 449.
TORRINGTON (Great), in Devonshire, XXI. 316.
TORSHOT, or Torjok, Russian town, XXI. 316.
Torsion (force of), Coulomb on, VII. 462.
Torsion-balance, IV. 386; XIV. 4; VIII. 549—employed in determining the earth's density, I. 835.
Torsk, fish, XII. 269.
Tortoise, XIX. 17; XVII. 634—hybernation of, II. 52—bones of, III. 86 *et seq.*—case of one which lived six months without the brain, 176; of another which survived without the head, 177—their power of fasting, 180.
Tortoise-encrinite, XVII. 99.
Tortoise-shell, XIX. 20.
 — ware, XVIII. 433.
TORTOLA, island, XXI. 316.
TORTONA, Italian town, XXI. 316.
TORTOSA, Spanish town, XXI. 316.
Tortrices, family of insects, IX. 215.
Tortrix, genus of serpents, XIX. 55.
Tortuga, bucaniers of, V. 707 *et seq.*
Torture, XVIII. 575—inflicted in English prisons, 568—in China, VI. 564.
Torus, in botany, V. 118—in architecture, III. 468, 476, 513.
Torwood, camp at, V. 414.
TOSCANELLA, in the Papal States, XXI. 316.
Tosorthros, Egyptian king, VIII. 454.
Tostig, VIII. 663.
Totanus, genus of birds, XVI. 805.
Totila, chief of the Goths, Rome occupied by, XIX. 363.
Totipalmæ, family of birds, XVI. 813.
TOTNES, in Devonshire, XXI. 316.
TOTONICAPAN, in Central America, XXI. 316.
Tott (Baron de), on the catacombs at Alexandria, II. 472.
TOTTENHAM, in Middlesex, XXI. 316.
Tottenhoe limestone, XX. 712.
Toucans, birds, XVI. 779; XVII. 633.
Touch, sense of, XIV. 565; XVII. 677—in various animals, III. 178; XIV. 135—in bees, IV. 572; the crustacea, VII. 538; insects, III. 177; IX. 44; fishes, XII. 221—its acuteness in the blind, IV. 773, 777.
TOUCH-NEEDLE, XXI. 316.
TOUL, town in France, XXI. 316.
TOULON, XXI. 317—events at, in 1793, X. 80—fire in the arsenal of, 227.
TOULOUSE, XXI. 317; X. 405—Academy of Floral Games at, II. 61—battle of, V. 614; XXI. 827—population, X. 277—university of, XXI. 448.

TOU—TRA

Toulouse (Count of), V. 448.
 Toulitcha, VII. 654.
 Touracos, birds, XVI. 784.
 Touraine, in France, X. 277.
 Tourinho (Pedro de Campo), V. 280.
 Tourmaline, XV. 89—pyro-electricity of, VIII. 529, 557—optical properties of, XVI. 647, 648—dichroism in, 666—artificial, 648 and *n.*
 Tourment, Cape, VI. 133.
 TOURNAMENT, XXI. 318; VI. 610 *et seq.*; VIII. 230; XI. 321.
 Tournay, town in Belgium, XXI. 318—siege of, in 1709, V. 451.
 TOURNEFORT (J. Pitton de), XXI. 318—on zoophytes and stalactites, III. 169.
 TOURNEUR (Pierre le), XXI. 319.
 Tourniquet, XX. 825.
 TOURNON, town in France, XXI. 319.
 TOURNUS, town in France, XXI. 319.
 TOURS, town in France, XXI. 319—population of, X. 277.
 Tousoun Pasha, III. 365; VIII. 493.
 TOUSSAINT (Louverture), XXI. 319; XI. 256—base treatment of, V. 591.
 TOWER HAMLETS, XXI. 319.
 —in architecture, III. 513—of London, XIII. 670—of the winds, in Athens, VII. 774; III. 139.
 Towers (Mr), on shelter for gardens, XI. 698.
 —(Round), in Ireland, III. 284; VI. 240, 755; VIII. 216; XIII. 83, 86; XIV. 371, 377; XV. 410; XX. 331; XXI. 409.
 Townley (Richard), on the elastic force of the air, IV. 462; I. 729—his micrometer, XIV. 743.
 Towns, site and laying out of, III. 493; XIV. 443; town-gardens, III. 494—draining of, 495; VIII. 125—cause of the atmosphere of being deleterious to plants, V. 106, 107—fortification of, IX. 813. See Sanitary Science.
 Townsend (Mr), on language, XIII. 198 *et seq.*
 Towton, battle of, VIII. 691.
 Towy, river, VI. 52.
 Toxicology, XIV. 432, 463; XVIII. 127. See Poison.
 Toxoceras, fossil mollusks, XVII. 113.
 Toxophora, genus of insects, IX. 234.
 Toxotes, genus of fishes, XII. 301, 303—fossil, 345.
 Toxotus, genus of insects, IX. 146.
 Tracery, in architecture, III. 513—of windows, XXI. 734—element of the, *ib.*—joints, *ib.*
 Trachea, in man, III. 66—in brutes, 102—surgical treatment of diseases of, XX. 832—its disorders in the domestic animals, XXI. 571.
 Tracheliast, zoophytes, XXI. 982.
 Trachelides, family of insects, IX. 133.
 Trachelium, in architecture, III. 513.
 Trachelochismus, genus of fishes, XII. 307.
 Trachelyopterus, genus of fishes, XII. 262.
 Trachenchyma, tissue in plants, V. 70.
 Tracheotomy, XX. 833—in the domestic animals, XXI. 572.
 Trachichthys, genus of fishes, XII. 283.
 Trachinotus, genus of fishes, XII. 297—fossil, 345.
 Trachinus, genus of fishes, XII. 273.
 Trachyderes, genus of insects, IX. 144.
 Trachydermis, genus of fishes, XII. 282.
 Trachy-dolerite, XV. 133.
 Trachynotus, genus of insects, IX. 129.
 Trachypterus, genus of fishes, XII. 207, 303.
 Trachyrkamphus, genus of fishes, XII. 315.
 Trachys, genus of insects, IX. 105.
 Trachytes, rocks, XV. 132—their association with dolerites, 191.
 Traction, action of the muscles in, III. 40.—line of, XX. 539.
 Tractors, Perkins' metallic, XX. 415.
 TRACY (A. L. C. Destutt de), count, XXI. 319—on metaphysics, XIV. 565, *n.* 5, 570—on political economy, XVIII. 244, *n.*; 229, *n.*
 Trade, errors respecting the balance of payments, IX. 435—profits of, with colonies, VII. 141—mode of conducting

TRA—TRA

it in China, VI. 590—of France, with foreign nations, X. 259. See Commerce, Political Economy.
 TRADE MUSEUMS AND SCHOOLS, XXI. 321.
 Trade-winds, XIV. 647; XVII. 577, 614—in South America, II. 671.
 Trades, their effects on health, XIV. 442—list of those requiring license, XIII. 435—necessity of removing offensive trades from towns, XIX. 619—in London, XIII. 660; Paris, XVII. 284.
 Trades' House, Glasgow, X. 653.
 TRADITION, XXI. 325—mistaken traditions rectified by philology, XVII. 541—received by Papists as an addition to Scripture, XVIII. 337.
 TRAFALGAR, Spanish cape, XXI. 325—battle of, V. 598; VII. 128; XVI. 138; XXI. 725.
 Traffic, on railways, passenger, XVIII. 787, 789—goods, 788, 789—development and distribution of, 791.
 Tragacanth, gum, V. 190.
 Tragedy, Aristotle on, III. 559—meaning of the word, IV. 348—Greek, VIII. 138—Roman, 141—French, 149.
 Tragi-comedy, French, VIII. 153.
 Tragocerus, genus of insects, IX. 145.
 Tragopa, genus of insects, IX. 170.
 Tragopan, genus of birds, XVI. 790.
 Tragos, fossil sponges, XVII. 93.
 Traill (James), of Ratter, his improvements in the agriculture of Caithness, VI. 62.
 —(Mr), his gardening in Egypt, VIII. 499, *n.* 3.
 —(Prof.), his account of an albino family, II. 448—on the ruins of Babylon, IV. 345—his register thermometer, 460—on ink, XII. 383—on the connection between the temperature and magnetism of the globe, XIV. 11—his outlines of Medical Jurisprudence, 424—his method of detecting mercury in cases of poisoning, 433—on the Ca'ing whale, 228—on the character of Roscoe, XIX. 419.
 Training, VIII. 24—among the Greeks, XIX. 851; Spartans, XX. 503—of fruit-trees, XI. 697, 705, 709.
 Trains of mechanism, XIV. 400, 404—of wheelwork, 400—epicyclic, 401—in hydraulics, XX. 200.
 TRAJAN, Roman emperor, XXI. 325—reign of, XIX. 341—his war with the Parthians, XVII. 312—his pillar, XIX. 341—his bridge over the Danube, VII. 652; XVII. 641—Egypt under, VIII. 472.
 Trajanus Decius, reign of, XIX. 348.
 TRALEE, Irish town, XXI. 325; XIII. 75.
 TRALLIANUS (Alex.), XXI. 325; II. 466; XIV. 455; XX. 814.
 Tram-roads, XVIII. 752, 753—American, 754.
 Trammel-net, IX. 636; XIX. 89, 91.
 Tramontin, his work on the silk-worm, IX. 23.
 Trance, XVII. 700.
 TRANENT, Scotch village, XXI. 325.
 TRANI, seaport, Naples, XXI. 325.
 TRANQUEBAR, in India, XXI. 325.
 TRANSCAUCASIA, XXI. 325; XIX. 551.
 Transcendental philosophy of Kant, XIII. 48.
 Transcribers of books, before the invention of printing, IV. 706.
 Transept, in architecture, III. 513.
 TRANSFIGURATION, XXI. 325.
 Transit instruments, IV. 152—circle at Greenwich, I. 850; III. 817.
 —of planets over the sun's disc, IV. 62.
 Transition cells, XVII. 650.
 —rocks, XVII. 587. See Geology.
 Transitive verbs, X. 722.
 TRANSMIGRATION, XXI. 326—as understood by the Hindus, I. 463; XI. 470—the doctrine imported into India from Egypt, XV. 762.
 Transom, in architecture, III. 513.
 Transparency, XIII. 451.
 Transpiration of leaves, V. 103.
 Transplanting, XI. 695.

TRA—TRE

TRANSPORTATION, punishment of, XXI. 326; VII. 139—penal servitude substituted for, 150; VIII. 750—numbers sentenced to, *ib.*—origin of, XVIII. 576—reaction against, 579—gradual abandonment of, 580—abolition of, 581—cessation of, to New South Wales, XX. 897.
 Transporting machines, XIV. 415.
 Transposition, in languages, XIII. 189 *et seq.*
 TRANSUBSTANTIATION, XXI. 326; XVIII. 336—Gibbon's argument against, I. 154—Cranmer on, VII. 484—first use of the term, XVII. 483.
 TRANSYLVANIA, XXI. 326; IV. 309; XII. 20—collection of gold in, V. 46—height of mountains in, XVII. 642—its alliance with Sweden, XX. 851.
 Trant (Captain), on the Turkish army, III. 657, *n.* 1.
 Trap-rocks, XV. 134—classification of, 155—form and position, 187—distinction between intrusive and contemporaneous trap, 188—dykes and veins of, 189—absorbent property of, VII. 108—as building-stone, XX. 711.
 TRAPANI, XXI. 326; XX. 245, 255.
 Trapelus, genus of reptiles, XIX. 32.
 Trapezoid, X. 508—to find the area of, XIV. 503.
 Trapezus, XXI. 327.
 Trass, or terrass, for mortar, XX. 714.
 TRAVANCORE, in India, XXI. 326—Nestorians in, XVI. 152.
 Traverses, in fortification, IX. 819—in railways, XVIII. 777.
 Trawl-net, IX. 636; XIX. 89, 92.
 Treacle, distinguished from molasses, XV. 310—microscopic lenses made by, XIV. 769.
 Tread, in horses, XXI. 562.
 Tread-mill, XIII. 278; XVIII. 573—its effect on health, XIV. 445.
 TREASON, XXI. 326—punishment of, V. 514.
 Treasure, rates of conveyance of, in H. M.'s ships, XVI. 116.
 Treasurer of the Royal Household, XI. 774.
 TREASURE-TROVE, XXI. 328; XVIII. 467.
 TREASURY, XXI. 326.
 Treaties, commercial, VII. 195—importance of, in history, XI. 539—whether all treaties are annulled by war, V. 588—treaty of the three kings, IV. 308.
 Trebia, battle of, VI. 294; XIX. 310.
 TREBIZONDE, or Trebisond, XXI. 326; IV. 744.
 Treble. See Music.
 Trecento, a style of architecture, III. 450.—age of Italian literature, XII. 660.
 Trecul on the physiology of plants, V. 102.
 TREDEGAR, in Monmouthshire, XXI. 327.
 TREDGOLD (Thomas), engineer, XXI. 327—on the strength of timber, &c., I. 876; of ropes, XIX. 402—his formula representing the relation of the temperature and pressure of steam, XX. 565.
 Tree of Life, I. 453; XXI. 197.
 Tree-climber, fish, XII. 289.
 Tree-ferns, V. 84, 85.
 Tree-frogs, XIX. 78.
 Tree-serpents, XIX. 57.
 Treenails, oak, strength of, XX. 188.
 TREES, XXI. 327; V. 78—dimensions of their stems, 101—age of, 168—fruit trees, XI. 702 *et seq.*—nursery culture of, XVII. 766—producing substitutes for soap, XX. 366—when a tree should be cut down, XXI. 268. See Planting, Timber.
 Treffer (Florian), on the classification of books, IV. 715.
 Trefoil, seeds of, as a dyestuff, VIII. 297.—in architecture, III. 513.
 Tregellis (Dr), on palimpsests, XVII. 209, 210—his edition of the New Testament, XIX. 837.
 Treitschke (Frederick), his work on insects, IX. 15.
 Trellis girders, XX. 781.

TRE—TRI

Tremadoc, embankments at, VIII. 644, 647.
 Tremadota, zoophytes, XXI. 979, 976, 978.
 Tremandraceæ, nat. order of plants, V. 183.
 Trembley (M.), on the effects of electricity on the pulse, VIII. 602.
 Tremiti islands, XX. 242.
 Tremoctopus, genus of mollusks, XV. 401.
 Tremolite, mineral, XV. 81.
 Trenching, II. 289—trenching fork, 274.
 Trendelenburg on logic, XIII. 577, *n.*, 578, *n. et seq.*
 Trengrouse (Mr), on the use of rockets in shipwreck, XIII. 441.
 TRENT, Austrian city, XXI. 327.
 —COUNCIL OF, XXI. 328; XVIII. 825, 826—summary of its decrees, 336—on predestination, 179—concerning the Vulgate, IV. 701.
 —river, XXI. 327; XVI. 338, 340; XX. 529; XIII. 491—warping on the banks of, XII. 618—iron bridge, 558, 559—Trent and Mersey Canal, VII. 754.
 TRENTON, in New Jersey, XXI. 328—military operations at, 751.
 Trepang, XXI. 985; IV. 300; XVII. 100.
 Trepine, use of, XX. 826, 827.
 TREPTOW (New), town in Prussia, XXI. 328.
 Treschow, Danish author, VII. 750.
 Tressure, XI. 330.
 Tret, in commerce, III. 595.
 Tretosternon, fossil tortoise, XVII. 153.
 Trevelyan (W. C.), on the aurora borealis, VIII. 589.
 —(Mr), his experiments on electric currents, XXI. 632.
 TREVES, town in Prussia, XXI. 328—massacre of the Jews at, XII. 778—government of, XIX. 145.
 Trevigno. See Rovigno.
 Treviranus on the brain, II. 820, 821.
 TREVISIO, Austrian town, XXI. 328.
 Trevithick (Richard), I. 882—his locomotive engines, *ib.*; XVIII. 779—his departure to America, I. 882.
 TREW (C. Jacob), XXI. 328.
 Trezza (la), town in Sicily, XX. 244.
 Triacanthus, genus of fishes, XII. 313.
 Trienophorus, genus of entozoa, XXI. 979.
 Triakis, genus of fishes, XII. 324.
 Trial by battle, VIII. 230. See Ordeal.
 —jury. See Jury.
 TRIANGLE, XXI. 328; X. 507 *et seq.*—to find its area, XIV. 503.
 Triangulation, IX. 555; XXI. 334, 335, 336.
 Triascope, XIII. 39.
 Triassic period, in geology, XV. 205—fishes of, XII. 349, 350; XVII. 125, 640—ichthyodolulites, 117—in Spain, XX. 483.
 Tribe, Irish, XII. 523—the twelve tribes, XVII. 192.
 Tribonian, one of the compilers of Justinian's code, VI. 745.
 Tribunal, international, XIII. 289.
 TRIBUNE, XXI. 328; XIX. 299—military, 302; III. 631.
 Tribute, derivation of, from colonies, VII. 140.
 Tricala, Turkish town, XXI. 350.
 Trichechus, genus of mammalia, XIV. 173.
 Trichiasis in animals, XXI. 577.
 Trichides, family of insects, IX. 127.
 TRICHINOPOLY, in India, XXI. 328; XI. 485.
 Trichites, fossil mollusks, XVII. 106.
 Trichiurus, genus of fishes, XII. 296.—electricus, VIII. 577.
 Trichius, genus of insects, IX. 127.
 Trichocephalus, genus of entozoa, XXI. 974.
 Trichocera, genus of insects, IX. 228.
 Trichoda, animalcules, III. 202.
 Trichodon, genus of fishes, XII. 273.
 Trichoglossus, genus of birds, XVI. 781.
 Trichomycterus, genus of fishes, XII. 263.
 Trichonotus, genus of fishes, XII. 307.
 Trichophorus, genus of birds, XVI. 752.
 Trichoptera, genus of insects, IX. 180.
 Trichopus, genus of fishes, XII. 290.

TRI—TRI

Trichosoma, zoophytes, XXI. 981.
 Trichotropis, genus of fossil mollusks, XVII. 110.
 Triclasite, XV. 89.
 Triclinohedric system of crystallisation, XV. 49—twin crystals in, 53.
 Tricocephalus, zoophytes, XXI. 981.
 Triconodon, genus of fossil mammals, XVII. 161.
 Tridacna, genus of mollusks, XV. 349.
 Tridacnidae, family of mollusks, XV. 349.
 Tridactylus, genus of insects, IX. 158.
 TRIDENT, XXI. 329.
 TRIESTE, XXI. 329.
 Triewald's diving-bell, VIII. 62.
 Trigger of a gun, XI. 99—hair-trigger, ib.
 Trigla, genus of fishes, XII. 280, 282.
 Triglopsis, genus of fishes, XII. 282.
 Trigno, river, XX. 238.
 Trigona, crustacea, VII. 541.
 — fossil mollusks, XVII. 108.
 Trigones, insects, IX. 203.
 Trigonla, genus of mollusks, XV. 349, 347—fossil, XVII. 106.
 Trigonidae, fossil mollusks, XVII. 106.
 Trigonoccephalus, genus of serpents, XIX. 67.
 Trigonoceras, fossil mollusks, XVII. 112.
 TRIGONOMETRICAL SURVEY, XXI. 330.
 — canons, XIII. 565.
 TRIGONOMETRY, XXI. 338—spherical, 343—introduction of, I. 551—improvement in, during last century, 701—characters of abbreviations in, VI. 419.
 Trigonosemus, fossil mollusks, XVII. 103.
 TRIKHALA, Turkish town, XXI. 350.
 Trillaceae, nat. order of plants, V. 210.
 Trilobites, VII. 543; XVII. 101, 102.
 TRIM, Irish town, XXI. 350.
 Trimera, section of insects, IX. 151.
 Trimmers, in carpentry, V. 748.
 TRINCOMALIE, in Ceylon, XXI. 350; VI. 391.
 Trineuræ, family of insects, IX. 258.
 Tringa, genus of birds, XVI. 803.
 TRINIDAD, West India island, XXI. 351—pitch lake in, XVI. 100; XVII. 602.
 TRINITY, XXI. 193—Howe on, XI. 789—Dr Samuel Clarke on, VI. 757—punishment of the denial of the, IV. 754—doctrine of the, not held by Quakers, XVIII. 716.
 — College, Dublin, XII. 532; XXI. 485—Cambridge, 466—Oxford, 459.
 — House, London, XIII. 662.
 — Oxford term, XXI. 458.
 TRINO, Italian town, XXI. 352.
 Trinucleus, trilobite, XVII. 101, 102.
 Trio, or Terzetto, in music, XXI. 352.
 Trionyx, genus of reptiles, XIX. 21—fossil, XVII. 153.
 Triphane, mineral, XV. 72.
 Triphyline, mineral, XV. 101.
 Triphyllus, genus of insects, IX. 142.
 Triplax, genus of insects, IX. 151.
 Triplet microscope, XIV. 775.
 Triplite, mineral, XV. 101.
 Tripod, VII. 709.
 Tripodes in ancient Athens, IV. 164.
 TRIPOLI, in Barbary, XXI. 352; H. 223—silk of, XX. 277—weights and measures, XXI. 814. See Barca.
 — in Syria, XXI. 354.
 — mineral, XV. 69—composed of infusoria, XVII. 94.
 TRIPOLITZA, town in Greece, XXI. 354—sacking of, in 1821, XI. 25.
 Trireme, XX. 117.
 Trisection of angle, III. 143.
 Trismegistus. See Hermes.
 Trissino, his tragedy of Sophonisba, VIII. 147.
 Tristan (General), IV. 832.
 Tristernagh, in Westmeath, XXI. 840, 841.
 Tristoma, zoophytes, XXI. 980.
 Tristychius, genus of fossil reptiles, XII. 339.
 Tritoma, genus of insects, IX. 151.
 Tritomite, mineral, XV. 91.
 Triton, genus of mollusks, XV. 365—fossil, XVII. 110.
 — reptile, XIX. 83.

TRI—TRO

Tritonia, genus of mollusks, XV. 390—ova, 389.
 TRIUMPH, XXI. 354—triumphal arch, III. 418—road, XIX. 228.
 Triumvirate, first Roman, XIX. 324—second, 328; III. 283.
 Triuridaceæ, nat. order of plants, V. 215.
 Trivia, fossil mollusks, XVII. 110.
 Trivium, in ancient schools, XXI. 444.
 Trixa, genus of insects, IX. 248.
 Troad, coinage of, XVI. 375.
 TROAS, XXI. 354.
 Trochanters, III. 34.
 Trochetia, genus of annelides, XI. 307.
 Trochidae, mollusks, XVII. 110.
 Trochilus, genus of birds, XVI. 769.
 Trochoceras, fossil mollusks, XVII. 112.
 Trochocyathus, fossil corals, XVII. 97.
 Trochotoma, fossil mollusks, XVII. 109, 111.
 Trochus, genus of mollusks, XV. 382.
 Troglodytes, in Arabia, III. 357.
 — genus of mammalia, XIV. 137—dentition of, XVI. 456, 457.
 — genus of birds, XVI. 756.
 Trogon, bird, XVI. 779.
 Trogontherium, fossil animals, XVII. 173.
 Trogositæ, family of insects, IX. 143.
 Troglus, genus of arachnides, III. 387.
 TROGUS POMPERUS, Roman historian, XXI. 354; XIII. 29.
 Trolling, a mode of fishing, III. 158.
 Trombidium, genus of arachnides, III. 387.
 Trombone, XV. 713.
 TROMP (M. H. Van), Dutch admiral, XXI. 355; V. 415, 422; XI. 574 *et seq.*
 Trompe, or water-bellows, XII. 183.
 TROX, or Trond (St), town in Belgium, XXI. 355.
 — weight, XXI. 809.
 Trona, mineral, XV. 98.
 — Lakes of Fezzan, IX. 531.
 Tronchet (M.), X. 74.
 TRONDHEIM, in Norway, XXI. 355—climate of, XVI. 323.
 Trondray, one of the Shetland islands, XX. 113.
 Tronto, river, XII. 638.
 TROON, in Ayrshire, XXI. 355—harbour of, IV. 333—railway to, XIII. 88.
 Troop-horse, XI. 657.
 Troostite, mineral, XV. 100.
 Tropæolaceæ, nat. order of plants, V. 188.
 Tropes, in rhetoric, XIX. 132, 133.
 Trophon, fossil mollusks, XVII. 110.
 Tropic-bird, XVI. 815.
 Tropical hot-houses, XI. 729.
 Tropics, IV. 11; X. 481.
 Tropidia, genus of insects, IX. 241.
 Tropidonotus, genus of serpents, XIX. 58.
 TROPFAU, in Austrian Silesia, XXI. 355—congress at, V. 631.
 TROSACHS, in Perthshire, XXI. 355.
 Trotman's anchor, III. 118, 119; XX. 24.
 Trotter (Mr), charges against, as paymaster of the navy, V. 599, 600.
 — (Mr), on poultry, II. 356.
 Trotting of horses, XI. 656, 675.
 TROUBADOURS, XXI. 355; VII. 536—era of, XIV. 458—subject of their poetry, XVIII. 107.
 Trough galvanic battery, XXI. 610 *et seq.*
 Troughton (Mr), his astronomical instruments, III. 808—transit instruments, IV. 152, 153—mural circle, ib.—wire micrometer, XIV. 743.
 Trouin (Duguay), French admiral, V. 282.
 Trous-de-loup, IX. 799.
 Trout, common, XII. 242; IX. 763—sea, XII. 240—bull, ib., 242; IX. 617—great lake, III. 156.
 Trout-fishing, III. 152, 156.
 Trouvères, literature of the, XVIII. 148, 115.
 Trouveurs, VII. 536.
 TROWBRIDGE (Sir Thomas), admiral, XXI. 355; XVI. 134, 135.
 — in Wiltshire, XXI. 355.
 Trowsers, V. 313.
 TROY, XXI. 356—Bryant's opinions on, V. 706.
 — town in America, XXI. 359.

TRO—TUB

TROY-WEIGHT, XXI. 359; III. 584—origin of the name, XXI. 807—table of, 808—Scottish, 809.
 TROYES, town in France, XXI. 359—population, X. 277.
 Truck, or barter, IV. 478.
 Trudaine's burning lens, VI. 14.
 Truffies, V. 217, 146—of Dordogne, VIII. 107—of Charente, VI. 421.
 TRUMAN (Joseph), theological writer, XXI. 360.
 TRUMPET, XXI. 360; XV. 712—articulate trumpet, XXI. 360; II. 106; IV. 454.
 Trumpet-flower, order of plants, V. 200.
 Truncatipennes, insects, IX. 81, 83, 84.
 Trundles, XIV. 396.
 Trunk, of the elephant, III. 100; XIV. 194.
 — of the human body, regions of, III. 1—osteology of, 4—muscles of, 39.
 Trunk-drainage, VIII. 180.
 Truran (Mr), his description of a hot-blast furnace, XII. 545, 546, 551.
 TURO, town in Cornwall, XXI. 361.
 Truss, in architecture, III. 513—in carpentry, V. 749; in roofs, XIX. 381—trussing in ship-building, XVI. 97; XX. 181, 182.
 Trustees, Scottish Board of, VIII. 396—of roads, XI. 433.
 Truth, the progress of, I. 120—Dr Beattie on, IV. 531—Influence of, XIII. 368—relations of logic to, 576—a duty to our fellow-men, XV. 566—necessary truths, XIV. 597.
 Truxalis, genus of insects, IX. 159.
 TRUXILLO, town in Honduras, XXI. 362; XI. 612.
 — in Peru, XXI. 361; XVII. 474.
 — in Spain, XXI. 361.
 — in Venezuela, XXI. 361.
 Trygon, genus of fishes, XII. 327—fossil, 342.
 Trygonidae, family of fishes, XII. 327.
 Trygonoptera, genus of fishes, XII. 328.
 Trygonorhina, genus of fishes, XII. 327.
 Trypauchen, genus of fishes, XII. 306.
 Trypeta, genus of insects, IX. 252.
 TRYPHODORUS, Greek poet, XXI. 362.
 Tryphon, genus of insects, IX. 188.
 Trypoxylon, genus of insects, IX. 196.
 Trystichius, genus of fossil fishes, XVII. 117.
 Trythings, II. 481.
 Tsabaism, in Egypt, XV. 764.
 Tsana, lake. See Dembia.
 Tsarskoe-selo, town in Russia, XXI. 968.
 Tschadda, affluent of the Niger, II. 214; XVI. 266.
 Tscherkask, VII. 423.
 TSCHERNHAUSEN (E. Walter Von), XXI. 362—his burning mirror, VI. 2, 10, 13.
 Tsebath, (El), name of God, XXI. 189.
 Tsetse, African fly, II. 218—its limited distribution, XVII. 630.
 Tshudish language, XIII. 215.
 Tsientang, river, bore in, XVII. 581.
 Tso Moriri, lake, XI. 440.
 TUAM, Irish town, XXI. 362—castle of, X. 391.
 Tuaricks, II. 219.
 Tuart, timber-tree, XXI. 278.
 Tub-wheels, XII. 169.
 Tubellaria, zoophytes, XXI. 982.
 Tubercles, XVII. 690.
 Tubergite, mineral, XV. 80.
 Tubers of plants, V. 79.
 Tubes, quantity of water discharged by, XII. 115—strength of wrought-iron tubes, XX. 178—for thermometers, XXI. 221—stronger than solid rods containing the same quantity of timber, XX. 766.
 Tubicenus, genus of insects, IX. 138.
 Tubicolæ, order of annelides, XI. 294.
 Tubina, fossil mollusks, XVII. 109, 111.
 TUBINGEN, in Würtemberg, XXI. 362—Academy of History at, II. 69—university, XXI. 492.
 Tubular bridges, XII. 607.
 Tubulariada, zoophytes, XXI. 1006.
 Tubulibranchiata, order of mollusks, XV. 378.
 Tubulifloræ, nat. order of plants, V. 197.

TUC—TUR

Tuch (Prof.), XVII. 535.
 TUCKER (Abraham), XXI. 362—Dr Paley's opinions of his writings, I. 114, n—character of his mind, 386—somewhat resembled Montaigne, 387—works of, ib., 388.
 — (JOSIAH), dean of Gloucester, XXI. 362—on the Naturalisation Bill, XVIII. 259, n. 2—on taxation, XXI. 42.
 Tucker's locks, XIII. 540.
 Tuckey (Captain), his African expedition, II. 210; VII. 245, 246.
 TUCUMAN, XXI. 363; XVII. 779.
 TUDELA, Spanish town, XXI. 363.
 Tuesday, I. 458, n.; VI. 75.
 Tufa, calcareous, XV. 92, 143.
 Tuff, XV. 133.
 Tuilleries, palace of the, XVII. 281.
 Tuke (Sir Brian), first postmaster-general, XVIII. 402.
 TULA, in Russia, XXI. 363.
 Tulip-tree, XVII. 761, 627; V. 180.
 Tulips, V. 212—culture of, XI. 751—tulipmania, IV. 440.
 Tull (Jethro), his system of husbandry, II. 259, 260, 373—revived by Mr Smith of Lois Weedon, 293, 308.
 TULLAMORE, Irish town, XXI. 363; XIII. 93.
 TULLE, town in France, XXI. 363.
 Tullia, daughter of Cicero, VI. 719.
 Tullin (C. Brauman), Danish poet, XIX. 693.
 TULLUS HOSTILIUS, XXI. 363; XIX. 296.
 Tumbler lock, XIII. 533.
 Tummel, Scotch river, XVII. 455.
 Tumours, XVII. 690—surgical treatment of, XX. 833.
 TUN, XXI. 363—gyle-tun, V. 328.
 Tunaberg copper-mines, XVII. 621.
 TUNBRIDGE, in Kent, XXI. 363; XIII. 66, 67.
 — or TONBRIDGE WELLS, XXI. 363—mineral waters of, XV. 88.
 — sandstone, XX. 711.
 Tundras, XVII. 610; XXI. 298.
 TUNE, in music, XXI. 364—phrenological faculty so named, XVII. 563.
 Tungsten, in chemistry, VI. 494—in mineralogy, XV. 66.
 Tungsten-ochre, XV. 112.
 Tungstic acid, VI. 494.
 Tungús, IX. 345.
 Tungusians, XIV. 260—language of, XIII. 217.
 Tunicata, class of mollusks, XV. 330, 322.
 TUNIS, in Barbary, XXI. 364; II. 233; IV. 431; VI. 288—Blake's attack on, IV. 752—weights and measures, XXI. 814.
 Tunkin, III. 735. See Tonquin.
 TUNNEL, XXI. 365—blasting of, IV. 755—Brindley's, V. 364—construction of, VII. 225—on railways, XVIII. 760—Thames tunnel, XIII. 676. See Thames Tunnel.
 Tunny, XII. 293; IX. 765—fishery, XX. 246.
 — (Mr), his application of photography to porcelain, XVII. 551.
 Tupac Amaru, insurrection of, in Bolivia and Peru, IV. 831.
 Tupala, genus of mammalia, XIV. 151.
 Tupinoquins, Brazilian tribe, V. 280.
 Turanian languages, XIII. 217; XVII. 535—classification of, 536.
 Turanians, IX. 344.
 Turbinate bones of man, III. 23.
 Turbine wheels, XII. 76, 169, 170, 171; I. 889, 890.
 Turbinella, genus of mollusks, XV. 389.
 Turbinidae, family of mollusks, XV. 382.
 Turbinolia, fossil corals, XVII. 97.
 Turbinolidae, zoophytes, XXI. 1005.
 Turbo, genus of mollusks, XV. 382—fossil, XVII. 110.
 Turbot, XII. 271—as food, IX. 764—fishery, 634, 648.
 Turcomans, III. 751; XXI. 378—of Bukhara, V. 758.
 Turenne, X. 34; IX. 371.
 Turf, as fuel, X. 318—in France, 251.
 Turgite, mineral, XV. 109.

TUR—TUR

- TURGOT (A. R. J.), XXI. 365; X. 38—meaning attached by, to the word *physics*, I. 9—on M. de Gournay, VIII. 374, 375—his account of the death of Queen Margaret, XIX. 748; and on her influence over her husband, *ib.*, n. 3—on the Corvée system, XXI. 43.
- TURIN, XXI. 366; XIX. 640—Royal Academy of, II. 63—Academy of Painting at, 68—discovery of part of the Theodosian code at, VI. 744—Prince Eugene's victory at, IX. 369—treaty of, in 1703, XII. 652—papyri in the museum of, XVII. 263, 264—university of, XIX. 639; XXI. 366; library of, XIII. 417.
- TURKESTAN, XXI. 367. See Bukhara.
- CHINESE, XXI. 367.
- TURKEY, XXI. 368; IX. 403—army of, III. 656—war with Austria, IV. 303—war with Britain, in 1806, V. 603—war with the Greeks, 651; XI. 22 *et seq.*—battle of Navarino, 30—war with France, in 1799, VIII. 488—mountains of, IX. 383—French trade with, X. 259—Jews in, XII. 783—libraries, XIII. 427—coins, XV. 442, 445—monarchy, 414—wars with Russia, XIX. 476, 482 *et seq.*; V. 538; X. 144; XX. 855 *et seq.*—last war with Russia, XIX. 500 *et seq.*—Charles the Twelfth's retreat to, XX. 854; his singular conduct there, 855—production of silk in, 277—navy, 138—destruction of its fleet at Sinope, 308—conquest of Syria by Mohammed Aly, 911—weights and measures, XXI. 814—tobacco of, 294—wines, 886—maps of Turkey in Europe and Turkey in Asia, XXI. Plates. See Turks.
- bird, XVI. 786; XVII. 633; IX. 762.
- Company, XII. 818.
- Turkey-blue, dyeing of, VIII. 303.
- Turkey-buzzard, XVI. 739.
- Turkey-oilstone, XI. 614.
- Turkey-red, dyeing of, VIII. 292, 318.
- Turks, IX. 344—African, II. 218—tribes of, III. 744—their conquest of Algiers, II. 566—allegiance to, thrown off by the Algerines, 569—origin of their hatred towards the Persians, III. 362—their conquests in Arabia, 363, 365; and in other parts of Asia, 744—appear to be encamped rather than settled in Europe, IV. 173, n. 2—siege of Athens by, 174—their baths, 506—beards, 527—months, VI. 674—carpets, 270—their invasions of the eastern empire, VII. 314 *et seq.*—their first appearance in Europe, 319—Constantinople taken by, 321—invasion and conquest of Egypt by, VIII. 487—character of, 430, n. 4—language, IX. 389; XIII. 216—geometry of, X. 503—their inroads on Hungary, XII. 12 *et seq.*—in Greece, XI. 14; attempts to throw off their yoke there, 22 *et seq.*; sympathy felt for these attempts, 27—their attack on Malta, XIV. 114—conquest of Palestine by, XVII. 196—in Syria, XX. 909.
- Turner, V. 211—dyestuff, VIII. 297.
- TURNA, in Wallachia, XXI. 385; VII. 653.
- TURNAU, in Bohemia, XXI. 385.
- Turnbull (William), bishop, founder of Glasgow College, X. 646; XXI. 476.
- TURNEBUS (Adrian), XXI. 385.
- Turner (Dr), on gas-burners, X. 425—on the effect of the atmosphere of towns on plants, V. 106.
- (Sir James), V. 428.
- (J. M. WILLIAM), landscape painter, XXI. 385.
- on romance, XIX. 266, 267.
- (R.), roof at Liverpool constructed by, XIX. 398.
- (SHARON), historian, XXI. 390—his character of Richard I., VIII. 674—on the reign of Edward III., 683.
- (Sydney), his reformatory at Red Hill, XVIII. 202—on reformatory schools in Scotland, 205.
- Turner's account of Bootan, V. 33, 34.
- Turneraceæ, nat. order of plants, V. 193.
- TURNHOUT, town in Belgium, XXI. 390.

TUR—TWY

- TURNING, art of, XXI. 390—elliptic, VIII. 639.
- Turnips, when first given to sheep in England, II. 259—Tull on the culture of, 560—Dawson's culture of, 263; XI. 740—culture and varieties of, II. 317—manures for, 264, 317 (see Guano)—thinning of, 318—preserving for sheep, *ib.*—diseases, 319—inorganic matters in, 384—composition of the ash, 387—albuminous matters in, 419—drills, 275—cutters, 284—seed, 336—first introduction of, into Norfolk, XVI. 289.
- Turnip-fly, IX. 151; II. 319; XI. 740; XXI. 549.
- Turnpike roads. See Roads.
- weighing machine, XXI. 797.
- Turnstone, bird, XVI. 804.
- Turn-tables, on railways, XVIII. 769, 777.
- TURPENTINE, XXI. 392; XIX. 87, 88—oil of, XVI. 496—much used in oil-varnishes, XXI. 526.
- (valley of), XII. 736.
- Turquois, mineral, XV. 74—Persian mines of, XVII. 422.
- Turret, in architecture, III. 514.
- clocks, VII. 18.
- shells, XV. 383.
- TURETIN (Francis), theologian, XXI. 392—on theology, 181 *et seq.*
- TURRIFF, in Aberdeenshire, XXI. 392.
- Turritella, genus of mollusks, XV. 394.
- Turritella, genus of mollusks, XV. 383; XVII. 110, 113.
- Turritellidæ, family of mollusks, XV. 383.
- Turtle dove, XVI. 793—its insensibility to pain, III. 178.
- Turtles, XIX. 18; XVII. 634—as food, IX. 763—fossil, XVII. 153.
- Turtukai, VII. 654.
- Tuscan order of architecture, III. 451—modern Italian, 477.
- school of painting, XVII. 61.
- Tuscans, IX. 355. See Etruscans.
- TUSCANY, XXI. 392—French trade with, X. 259—coins of, XV. 442, 445—straw hats of, XI. 243—postal system of, XVIII. 424—railway statistics, 787—weights and measures, XXI. 814.
- TUSCULUM, ancient city of Latium, XXI. 398.
- Tusk, fish, XII. 269; IX. 764—fishery, 648.
- Tusks, III. 33; XVI. 478. See Elephant, &c.
- Tussac grass, II. 330; IX. 475.
- Tussah silk-worm, XX. 288, 289.
- Tusser on agriculture, II. 256.
- Tutors at Oxford, XXI. 455, 456.
- TUTTLINGEN, in Württemberg, XXI. 398.
- Tutulla, island, XVIII. 277.
- Tuxtla, volcano, XIV. 714.
- TUY, Spanish town, XXI. 398.
- Tuzla, salt lake in Asia Minor, III. 758.
- TVER, in Russia, XXI. 398; XIX. 521.
- TWEED, XXI. 398; XX. 41—source of, XVII. 360—valley of, XIX. 790—produce of, in salmon, grise, and trout, IX. 606—rental of the fisheries, *ib.*—fisheries on, 607—close time, 613.
- TWEEDDALE, XXI. 399; XVII. 360.
- (Marquess of), his steam-ploughing, II. 367—brick-making machine, V. 346—his tile-making machine, VIII. 133.
- TWEEDMOUTH, XXI. 399.
- Tweeds, kind of cloth, XXI. 906, 918.
- TWENTY-FOUR PERGUNNAHS, in India, XXI. 399.
- Twisten on logic, XIII. 592 n., 597 n., 628.
- Twice (William), his treatise on hunting, XII. 34.
- TWICKENHAM, in Middlesex, XXI. 399.
- Twilight, IV. 10, 179—how to find the length of, 113.
- Twilled, or figure-weaving, XXI. 785.
- Twinkling of the stars, IV. 10.
- Twins, weight of, III. 2.
- (The) constellation, X. 447; IV. 80.
- Twiss (Horace), XXI. 399.
- Twisting, strain produced by, XX. 755, 777.
- Twyte, bird, XVI. 761.

TYA—TYT

- Tyas (Sir Franco), XIII. 113.
- Tycho Brahe. See Brahe (Tycho).
- TYCHSON (O. Gerhard), orientalist, XXI. 399.
- Tyler (Wat), insurrection of, VIII. 684.
- Tylode, genus of insects, IX. 140.
- Tylostoma, fossil mollusks, XVII. 111.
- Tympans and tympan sheet, in printing, XVIII. 546.
- Tympanum of the ear, III. 46; XVII. 679—comparative anatomy of, III. 98.
- in architecture, III. 514.
- water-raising wheel, XII. 183.
- Tyndal (Prof.), on the motion of glaciers, XV. 139, n.
- TYNDALE, or Tindale (William), XXI. 399—his translation of the Bible, IV. 702.
- Tyndall (Dr), on diamagnetism, XIV. 30, 31.
- TYNE, English river, XXI. 400; XVI. 166, 299—Improvement Act, XVI. 168.
- coal measures of the district of, XV. 203.
- Scotch river, XI. 177.
- TYNEMOUTH, XXI. 400; XX. 115.
- TYPE-FOUNDING, XXI. 400—Caslon's improvements in, VI. 310; Baskerville's, IV. 486; XVIII. 539. See Types.
- Types for printing, first printing with moveable, XVIII. 524—invention of casting, 528—character of those first used by the early printers, 529—Caxton's, 536—first introduction of Roman, IV. 708—specimen of the different kinds, XXI. 403.
- organic, in chemistry, VI. 504.
- in numismatics, XVI. 353.
- Typhaceæ, nat. order of plants, V. 214.
- Typhis, fossil mollusks, XVII. 110.
- Typhlops, genus of serpents, XIX. 41.
- Typhon, Egyptian deity, VIII. 438—Bryant on, VII. 714.
- Typhoon, XVII. 616—in the Philippine islands, 512. See Cyclone.
- Typhus fever, IX. 526.
- Typography, IV. 707—early, 624. See Printing.
- Tyrannio, III. 536.
- Tyrannus, genus of birds, XVI. 749.
- Tyrant, thirty tyrants of Athens, IV. 208—the thirty Roman, XIX. 349. See Despot.
- Tyreennel (Lord), V. 441.
- TYRE, XXI. 403; X. 468; XVII. 182; XX. 269, 901 *et seq.*—era of, VI. 672—commerce of, VII. 185—dye of, VIII. 272—besieged by Saladin, 481—destroyed by Alexander, XIII. 767—coins of, XVI. 379—navigation of, I.
- Tyre of wheels, XVIII. 752.
- TYRHOOT, XXI. 406. See Tirhoot.
- Tyrie (David), execution of, for treason, V. 504.
- Tyrinthus, near Mycenæ, cyclopean structures at, III. 440.
- Tyrite, mineral, XV. 110.
- TYROL, XXI. 406; IV. 311, 309—heights of its mountains, XVII. 642, 643.
- TYRONE, Irish county, XXI. 406—agricultural statistics of, XII. 516, 517.
- (Earl of), his rebellions in Ireland, XII. 476, 478.
- Tyropeon, valley of, XII. 736.
- Tyro's shorthand writing, XX. 675.
- Tyrrel (Walter), VIII. 669.
- Tyrrell (Mr), his work on Cumberland's Law of Nature, VII. 579.
- Tyrrhenian coast of Italy, XX. 240.
- TYRTÆUS, Greek poet, XXI. 409.
- TYRWITT (Thomas), XXI. 409—his edition of the Canterbury Tales, VI. 433.
- Tyson (Edward), his researches in comparative anatomy, II. 763.
- TYTLER (William), XXI. 410.
- (ALEXANDER FRASER), Lord Woodhouselee, XXI. 410—on Ramsay's Monk and the Miller's Wife, VIII. 250—on Dr Doig, 91.
- (PATRICK FRASER), XXI. 412; XI. 548—his Life of the Admirable Crichton, VII. 497 *et seq.*—on Sir Thomas Craig's work on the Union, 478—on the supposed escape of Richard II. to Scotland, VIII. 686, n.

TZA—UMB

- Tzana, lake. See Dembea.
- TZETZES (Joannes), Greek grammarian, XXI. 415—his tale about Belisarius, IV. 627—on the burning-glasses of Archimedes, VI. 4.
- U
- U, letter of the alphabet, XXI. 416—in abbreviations, II. 20.
- Ubaldi (Guido), X. 375—on mechanics, I. 590—sector supposed to have been invented by, XX. 30.
- UBEDA, town in Spain, XXI. 416.
- UBIQUITARIANS, XXI. 416.
- Ucelli on ornithology, XVI. 728.
- Udal lands, IX. 522, n. 4—in Norway, XVI. 326.
- UDALL (Nicholas), XXI. 416—his comedy, 166.
- Udder, inflammation of, XXI. 571.
- UDINE, in Austrian Italy, XXI. 416.
- Uenephès, Egyptian king, VIII. 454.
- UFA, in European Russia, XXI. 416.
- UGLITCH, in Russia, XXI. 416; XVII. 24.
- Ugrians, IX. 345, 388—language, 389; XIII. 215.
- Uhland (Ludwig), German poet, XVIII. 119.
- Uist (South and North), XXI. 416; XI. 278.
- UKRAINE, XXI. 417.
- Uksur (el). See Luxor, temple of.
- Uladislas, kings of Poland so named, XVIII. 139 *et seq.*
- Ulama, in Turkey, XXI. 381.
- Ulceration, XVII. 690.
- Ulcers, surgical treatment of, XX. 827.
- ULEABORG, in Finland, XXI. 417; IX. 584, 585.
- Uleiota, genus of insects, IX. 143.
- Ulidea, genus of insects, IX. 253.
- Ullage of a cask, XIV. 524.
- Ullmannite, mineral, XV. 116.
- Ullnage, or measuring of cloth, XXI. 916.
- Ulloa (Don Antonio de), his secret report to the Spanish government, IV. 830—on the Peruvian Indians, *ib.*, 831—his measurement of an arc of meridian, IX. 549.
- Ullswater, English lake, VII. 577—trout of, III. 157, n.
- ULM, XXI. 417—battle of, V. 599—surrender of, to the French, X. 138.
- Ulmaceæ, nat. order of plants, V. 206.
- Ulna, in man, III. 32—in the mammalia, 81; birds, 86; reptiles, 88.
- Uloborus, genus of arachnides, III. 381.
- Ulocerus, genus of insects, IX. 138.
- Ulphilas, Gothic alphabet of, II. 615—Gothic Bible of, IV. 701; X. 729; XIII. 211; XX. 840—his version of the Gospels, and Epistle to the Romans, XVII. 209—Lord's Prayer, as translated by, X. 729.
- Ulpian Library, at Rome, XIII. 385.
- ULPIANUS (Domitius), jurist, XXI. 417—on Insurance, XII. 394.
- Ulrica Eleonora, XX. 857.
- ULSTER, Irish province, XXI. 417—colonisation of, by English and Scotch settlers, V. 386; XII. 479—massacre of the English in, V. 399—Remonstrant synod of, XII. 532—linen manufacture, XIV. 284.
- Ulster's office of arms, XI. 321.
- Ultima Thule, X. 462.
- Ultramarine, a colour, VIII. 175.
- Ulugh-Beigh, astronomy cultivated by, III. 795—his catalogue of stars, IV. 80.
- Ulula, genus of birds, XVI. 746.
- ULVERSTONE, in Lancashire, XXI. 417.
- ULYSSES, XXI. 417; XII. 452—character of, XVIII. 101.
- Umbel and umbellules, in botany, V. 114.
- Umbelliferous plants, V. 195—region of, 227; XVII. 627—poisonous species, XIV. 438.
- Umbilical cord, III. 72.
- arteries and veins, III. 72.
- Umbo, in bivalve shells, XV. 341.

UMB—UNI

- Umbra, in astronomy, IV. 45.
 — genus of fishes, XII. 251.
 Umbrella, genus of mollusks, XV. 372.
 Umbrina, genus of fishes, XII. 285.
 UMMERAPOORA, in Burmah, XXI. 418; IV. 322.
 Umzinkulu, river, XIII. 32.
 Unalashka, island, II. 465.
 Unau, in zoology, XIV. 190—its stomach, III. 108—intestines, 110.
 Uncites, fossil mollusks, XVII. 103, 104.
 Uncion, in baptism, IV. 424—extreme unction, IX. 458; XVIII. 336—one of the corruptions of Christianity, I. 520.
 Undercliff, Isle of Wight, XXI. 862.
 Undershot water-wheels, XII. 163.
 Understanding, Aristotle on, III. 549—Kant's categories of the, XIII. 47.
 Undertakers, Irish party, XII. 495.
 Underwriters, XIII. 530; XII. 419—their liability in case of collision, VII. 131—limitation of their liability, XII. 422.
 Undina, genus of fossil fishes, XII. 336.
 Undulation, of waves, XII. 162—of air, XVIII. 68 *et seq.* See Acoustics, Waves.
 Undulatory theory of light, VI. 662; XIII. 450.
 UNGHVAR, town in Hungary, XXI. 418.
 Unguents, for resisting friction in machinery, XIV. 405, 408.
 Ungulata, II. 774.
 Ungulina, genus of mollusks, XV. 350.
 Ungurutua, in Bornou, Richardson's death at, X. 478.
 Unicorn, in heraldry, XI. 334, 335.
 — sea, XIV. 229.
 Unigenitus, bull so called, X. 35.
 Unio, genus of mollusks, XV. 349, 347—*fry* of *U. littoralis*, 354.
 UNION, XXI. 418.
 — Canal, XIX. 808—viaduct over, at Falkirk, XVIII. 763.
 — Islands, XVIII. 278.
 — (The), of Britain and Ireland, XXI. 418; XII. 500—proposal for, V. 566—effected, 572—agitation for repeal of, 659.
 — (The), of England and Scotland, XXI. 418; V. 381, 449; VIII. 393; XVII. 291—attempts to dissolve it, V. 452—Defoe's mission to Edinburgh respecting it, VII. 696.
 Unionidae, family of fossil mollusks, XVII. 106.
 Unions for administering the poor-laws, VIII. 719; XVIII. 814.
 UNITARIANS, XXI. 418; XII. 764; XVIII. 489—their places of worship in England and Wales, VIII. 745; in Scotland, XIX. 801.
 United Brethren. See Moravians.
 — Presbyterian Church, XVIII. 496, 500—proportion of adherents in Scotland, XIX. 801.
 — STATES of North America, XXI. 419; II. 706—literature of, I. 203 and *n.* 2—American Academy of Sciences, II. 66—agriculture and population, 707—climate, 674—Indian population, 677, 693—natural bridge in Virginia, III. 130—army, 661—voting by ballot, IV. 400—barrows, 473—war of independence, V. 469, 476 *et seq.*; XXI. 749 *et seq.*—war with Britain in 1812, V. 615—bad effects of the mercantile policy of Britain towards, 617—bookselling in, 31, 32—Chalmers' Political Annals of, VI. 402—treaty with the Chinese, 597—coal in, VII. 126, 127—commerce, 190 *et seq.*—conduct of, in regard to international copyright, 360—law of copyright, 359—corn-trade, 404—cotton manufacture in, 458—growth and consumption of cotton in, 455; dependence of Britain on, for supplies of, XIV. 291—reprinting of British books in, VII. 360—designs on Cuba, 568, 569—docks of, VIII. 75—emigration to, 652; XVIII. 339—hardware manufacture, VIII. 729—exports and imports, IX. 436—federal government of, 498—conduct of France towards, X. 38—rate of interest in, XII.

UNI—URA

- 432; XXI. 75—Jews, XII. 782—recent intercourse with Japan, 698—libraries, XIII. 428—schools of medicine in, XIV. 464; XXI. 493—proportion of insane, XIV. 536—hostilities with Mexico, 713—coins of, XV. 442, 445—population, 605, 608; XVIII. 339—gold region of, XV. 232—metallic produce of, 248—education in, 820—banking, 491—newspapers, XVI. 192, 195—birds of, 733 *et seq.*—paper-making, XVII. 260—height of mountains, 645—limited liability in, 322—post-office, XVIII. 418; statistics of, compared with those of Britain, 420; packet service, 427; ocean mail service, 426—substitution of gold for silver currency, 474—reformed churches, 492—early printing, 533—locomotive engines, 780—railway statistics, 787—prison discipline, 571—penitentiaries, 572, 586—savings-banks, XIX. 671—locomotive steam-engine used in, XX. 615—navy, 138—maple-sugar, 798—Story on the constitution of, 737—experiments on steam, 558—introduction of steam-navigation by Fulton, 638—imports of tea into, XXI. 91; VI. 591—Tocqueville on, XXI. 299—colleges, 493—theological schools, 494—weights and measures, 814—Wilson on the ornithology of, 873—wines, 888—trade with Buenos Ayres, V. 726; Chile, VI. 551; China, 591; Britain, VII. 190; VIII. 732, 733; France, X. 260; Holland, XI. 584—Maps, XXI. Plates.
 Unities of the drama, observance of, by the French, VIII. 149, 156—their merit considered, 149—frequently disregarded by Shakspeare, 153; and by later dramatists, 163.
 Unity of God, XXI. 192—ancient mysteries supposed to teach the doctrine of, XV. 754.
 — of the Church, XVIII. 484.
 — of the Gospel Dispensation, I. 486—how to be understood, 487—what it consists in, 488.
 Univalve shells, XV. 365, 366 *et seq.*—fossil, XVII. 108 *et seq.*
 Universality of the Gospel Dispensation, I. 484.
 Universals, in Aristotelian philosophy, III. 548, 539.
 Universe, cause of, according to Plato, XVII. 803—opinions of the Druids respecting the, VIII. 185.
 UNIVERSITIES, XXI. 443—chancellor of, VI. 412—foundation of, XIV. 458; XVII. 521. See the different kingdoms and cities, particularly Paris, Oxford, Cambridge, Edinburgh, Glasgow, &c.
 University College, London, XXI. 470.
 Unkiar-Skelessi, treaty of, XIX. 498.
 UNST, Shetland Island, XXI. 494; XX. 113.
 UNTERWALDEN, XXI. 494; XX. 882.
 Unzer on the nerves, XVII. 676, 677.
 Upas tree, its poisonous principle, III. 270—in Ceylon, VI. 394.
 Upeneus, genus of fishes, XII. 279.
 Upis, genus of insects, IX. 130.
 Upolu, island, XVIII. 277.
 UPSAL, or Upsala, in Sweden, XXI. 495—university, 492—library of, XIII. 427.
 UPTON-UPON-SEVERN, XXI. 495.
 Upupa, genus of birds, XVI. 771.
 URAL Mountains, XXI. 495; III. 734; IX. 382; XVII. 597; XIX. 514—height of, XVII. 644—gold mines of, XV. 230, 231—silver and platina mines, 236.
 — river, XIX. 515.
 Uralite, mineral, XV. 81.
 Uralorthite, mineral, XV. 90.
 URALSK, in Russia, XXI. 495.
 Uran mica, XV. 104.
 — vitriol, XV. 98.
 Uranea, lake, deposit of infusoria at, XVII. 94.
 Urania, a muse, XV. 699.
 — genus of insects, IX. 209.
 Uranite, XV. 104.
 Uranium, VI. 496; XV. 66—its discovery by Klaproth, XIII. 106.
 Uranium-ochre, XV. 112.

URA—URU

- Uranoscopidae, family of fishes, XII. 272.
 Uranoscopus, genus of fishes, XII. 219, 273.
 Uranotantalite, XV. 109.
 Uranus, planet, IV. 72, 93—discovery of, I. 840; III. 807—satellites, I. 840, 860; IV. 75, 93—perturbations of, I. 828; IV. 107—principal inequality, I. 832—Delambre on the motions of, VII. 702—Robison on its orbit and motions, XIX. 239. See Adams, Leverrier.
 — (Nicephorus), VII. 313.
 Urao, mineral, XV. 98.
 Uraptera, genus of fishes, XII. 327.
 URATEPE, town in Bokhara, XXI. 495.
 Urate, II. 407.
 Urban IV. (Pope), XX. 257.
 — (Sir Benjamin), his proceedings against the Kafirs, XIII. 34.
 URBINO, in the Papal States, XXI. 495—university of, 492—legation of, XVII. 243.
 URE (Dr Andrew), chemist, XXI. 495—his analysis of barley, V. 324—his experiments on sugar as a substitute for malt in brewing, 336—on Bavarian beer, 335, 336—his detonating eudiometer, VIII. 625—on iron, XII. 538—on caoutchouc, VI. 203—on soap-making, XX. 366—his experiments on steam, 557, 558—his galvanic experiments on a dead body, XXI. 634—on the fineness of wool, 905.
 — river, XXI. 957.
 Urea, VI. 511; XVII. 666.
 Ureters, III. 68.
 Urethra, III. 68, 70—erectile tissue of, II. 799—surgical treatment of stricture of, XX. 831.
 Urfah, town in Turkey, XVI. 708.
 URRÉ (Honoré d'), XXI. 495; XIX. 269.
 URI, Swiss canton, XXI. 495; XX. 882—lake of, 889.
 Uria, genus of birds, XVI. 810.
 Uric acid, VI. 523; XVII. 666, 667.
 Urim and Thummim, XVI. 699.
 Urinals, at railway stations, XVIII. 770.
 Urinary organs of man, III. 68—in brutes, 113—concretions, XVII. 691—diseases of, in the domestic animals, XXI. 570. See Calculus, Lithotomy.
 Urine, II. 782; III. 68; VI. 523; XVII. 666—use of, in agriculture, II. 402—sulphated, 407—detergent property of, IV. 769, *n.*—coloured rings produced in, by voltaic electricity, XXI. 633.
 Urnia. See Urumiyah.
 Urmatella, zoophytes, XXI. 1002.
 Urocerata, family of insects, IX. 184.
 Uroconger, genus of fishes, XII. 232.
 Urolophus, genus of fishes, XII. 325, 328.
 Uromastix, genus of reptiles, XIX. 31.
 Uronemus, genus of fossil fishes, XII. 337; XVII. 125.
 Uropoda, genus of arachnides, III. 388.
 Uropterygius, genus of fishes, XII. 232.
 Urosphen, genus of fossil fishes, XII. 344.
 Urquhart (Sir Thomas), his account of the Admirable Crichton, VII. 498, 500—said to have died in a paroxysm of laughter, VIII. 192, *n.* 1.
 Urquiza (General), XVII. 781.
 Urrey (General), defeat of, V. 406.
 Urta, constellations, IV. 79.
 Ursinus, VII. 307.
 URSINUS (Fulvius), XXI. 496.
 — (Benjamin), on logarithms, XIII. 553.
 — (ZACHARIAS), German divine, XXI. 496.
 Ursula, VII. 307.
 — town in the Azores, IV. 336.
 Ursus, genus of mammalia, XIV. 153—dentition of, XVI. 462.
 Urticaceæ, nat. order of plants, V. 206.
 URUGUAY, South American state, XXI. 496.
 — river, XXI. 497; XVII. 603, 782.
 URUMIYAH, town in Persia, XXI. 497; XVII. 421.
 — Persian lake, XVII. 421.
 Urus, genus of mammalia, XIV. 214; IX. 387.

URV—VAG

- Urville (Captain Dumont d'), his antarctic expedition, X. 475.
 Usbecks, III. 751; IV. 396—of Bukhara, V. 758.
 Ushak, carpets of, XXI. 384.
 USHANT, island, XXI. 497.
 USHER (James), archbishop, XXI. 497—date assigned by, to the Creation, VI. 669—his MSS. in Trinity College, Dublin, XIII. 404—assisted Walton in publishing the Polyglott Bible, XXI. 695.
 — (Mr), his steam-cultivator, II. 367.
 Usia, genus of insects, IX. 234.
 Usk, Welsh river, V. 312—vale of, *ib.*
 USKUP, in Turkey, XXI. 497.
 Ustariz on the duties on provisions in Spain, XXI. 72.
 Usteropotmi, VII. 761.
 Ustica, island, XX. 246.
 USTING, town in Russia, XXI. 498.
 USURY, XXI. 498—argument of Calvin respecting, I. 233; XII. 427, *n.* 2—Bentham on, I. 393.
 Usury-laws, XII. 427—committee of 1818 on, 430—repeal of, *ib.*; benefits from that measure, VII. 199.
 UTAH, XXI. 498; XVII. 594—Mormon settlement at, XV. 592—language of, XIII. 222. See Salt Lake.
 Utero-gestation, limits of, XIV. 426. See Gestation, Pregnancy.
 Uterus, III. 71—Dr Hunter on the anatomy of, XII. 27, 31.
 UTICA, an ancient city of Africa, XXI. 498—taken by the Romans, VI. 300.
 — a town of the United States, XXI. 498.
 Utilitarian theory of morals, XV. 551, 553.
 Utility, the principle of, proclaimed by Bentham, I. 395; fully discussed by Hume, 445—considered in relation to morals, 398, 417; IX. 273.
 UTRECHT, XXI. 499—university of, 492; XI. 590—library of, XIII. 422—political movements at, in 1784, V. 525.
 — (Peace of), V. 452—provisions of, in reference to Spain, XX. 741.
 UTRERA, town of Spain, XXI. 499.
 UTTOXETER, in Stafford, XXI. 499.
 Uvea in various animals, III. 97.
 Uvula, III. 48.
 Uwarowite, mineral, XV. 85.
 UXBRIDGE, in Middlesex, XXI. 499.
 Uxmal, ruins at, II. 697.
 Uz, a region and tribe mentioned in the Bible, XXI. 499.
 Uzbecks, people of Bukhara, V. 758.
 Uzès, a town of France, XXI. 499.
 Uzziel (Jonathan Ben), his targum, XIX. 839.

V

- V, letter of the alphabet, XXI. 500—in abbreviations, II. 20.
 Vacarius, XXI. 452.
 VACCINATION, XXI. 500—Jenner's discovery of, and researches into, XII. 720, 722—attempts to introduce it into Persia, XVI. 430—Extension Act, XX. 606.
 Vacciniaceæ, nat. order of plants, V. 198.
 Vacomagi, Caledonian tribe, VI. 74.
 Vacuum, ancient opinions regarding, IV. 448, 449; VII. 726—passage of electrical spark through, VIII. 545—nature's supposed abhorrence of, XVIII. 24—rush of air into, 58—in the steam-engine, XX. 619—apparatus in some animals for producing a vacuum, III. 101.
 — gauge, XX. 589.
 — valves, XX. 589.
 VAGA (Perino del), a Florentine painter, XXI. 503.
 Vagh Ujhely, town in Hungary, XVI. 155.
 Vagina, III. 71.
 Vaginella, fossil mollusks, XVII. 110, 111.
 Vaginulus, genus of mollusks, XV. 374.
 Vagrancy, restraint of, XVIII. 299—diminution of, 301.

VAI—VAL

- VAILLANT (Jean Foy), French numismatist, XXI. 503.
 Vair, in heraldry, XI. 325.
 Vaisyas, a Hindu caste, VI. 318; XI. 471.
 Vaitapu Islands, XVIII. 278.
 Val (Camille J. du), his works on insects, IX. 24.
 VALAIS, Swiss canton, XXI. 504; XX. 882.
 Valbonais (Bourchemie de), IV. 779.
 VALCKENAER (Ludwig Kaspar), XXI. 505.
 — (JAN), XXI. 505.
 VALDAI, XXI. 505—mountains, XIX. 514.
 Valdemar II. and III. of Denmark, VII. 739.
 VALDENSES, or Waldenses, XXI. 505; II. 446.
 VALDEPENAS, town in Spain, XXI. 510.
 Valdez (General), IV. 833.
 VALDIVIA, in Chili, XXI. 510, 547; VI. 547.
 VALDO or Waldo (Peter), Lyonesse reformer, XXI. 510.
 VALENCE, in France, XXI. 512.
 VALENCIA, Spanish province, XXI. 512; XX. 493—silk, 278.
 — town, XXI. 513—university, 492.
 — town of Venezuela, XXI. 513.
 VALENCIENNES, French town, XXI. 513—lace, XIII. 149—siege of, in 1793; X. 79.
 — (M.), assists Cuvier in a work on fishes VII. 605—on fishes, XII. 235 *et seq.*
 Valens, Roman emperor, VII. 309.
 VALENTIA, XXI. 513—Island, XIII. 73—longitude of, 687.
 Valentine, Andrea, a Rosicrucian, XV. 757.
 — (Basil), on sal-ammoniac, II. 720—on brewing, V. 318.
 Valentini on medical jurisprudence, XIV. 423.
 Valentinian, Roman emperor, VII. 309.
 VALENTINIANS, a Gnostic sect, XXI. 513.
 Valentinite, XV. 112.
 Valentinus, founder of Gnostic sect, X. 688.
 Valerian, reign of, XIX. 348; V. 196.
 — Greek, V. 200.
 — order of plants, V. 196.
 Valerianaceæ, nat. order of plants, V. 196.
 Valerianus Magnus, discovery in pneumatics claimed by, XVIII. 25.
 Valerius Corvus, XIX. 303.
 — FLACCUS, XXI. 513. See Flaccus.
 — (Lucas), X. 504.
 — Maximus, his account of an enormous serpent, XIX. 63.
 — (Poplicola), XIX. 298.
 Valery on libraries, XIII. 415, 416 *et seq.*
 Valesco de Taranto, surgeon, XX. 817.
 Valesiana, II. 738.
 Valesius Henricus. See Valois, Henri de.
 VALETTA, XXI. 513; XIV. 115, 116.
 Valette, La, XIV. 114.
 Valin (Mons.), on collisions at sea, VII. 131.
 VALLA (Lorenzo), or Laurentius, Latin scholar, XXI. 513.
 Vallack (M.), his binocular telescope, XXI. 134.
 VALLADOLID DE MECHOACAN, XXI. 514. See Mexico.
 —, in Spain, XXI. 514—university of, 492.
 Vallancy (General), on Irish cromlechs, III. 433.
 Vallée (General), II. 575.
 Valley, great central valley of Syria, XX. 902—relation of valleys to rivers, XIX. 207.
 Vallisneria, plant, V. 69.
 Vallisneri (Antonio), his works on insects, IX. 3.
 Vallombrosa, mountains of, XXI. 392.
 VALLS, Spanish town, XXI. 514.
 Valmy, battle of, XIII. 59.
 VALOIS (Henri de), great French scholar, XXI. 514.
 Valonia, Vallonea, or Valona, IV. 330; XI. 16—its use in tanning, XIII. 306.
 Valparaiso, in Chili, VI. 542, 546, 547; XXI. 547.

VAL—VAR

- Valsalva, anatomist, II. 764.
 Value of commodities, XVIII. 210—by what regulated, 247—no fall in value of the precious metals, 477; but would be advantageous, 475—taxes estimated by value, XXI. 38.
 Valve of steam-engines (cylinder), XX. 581; valve-gear, 582 *et seq.*; expansion-valves, 585, 654; slide-valves, 596, 654 (see Slide-Valves)—stop-valve, 589—throttle-valve, *ib.*, 599—valve-chest in steam-engines, 589; XXI. 519.
 Valz, his micrometer, XIV. 758.
 Vampire, XIV. 148.
 Vampire-bat, XVII. 632; XVI. 452.
 VAN, town of Asiatic Turkey, XXI. 514.
 — Diemen, Dutch governor of India, X. 474.
 — DIEMEN'S LAND, XXI. 520. See Tasmania.
 — DYCK (Sir Anthony), painter, XXI. 520; III. 711; XVII. 56, 70, 75.
 — Effen, Dutch author, XI. 591.
 — Haren, (William and Onno), Dutch authors, XI. 591.
 — Marum, his electrical machine, VIII. 538—on the fusion of wires by electricity, 592—on the chemical agency of electricity, 595; its magnetic effects, 600; its influence on the pulse and on perspiration, 602, 603—on the electricity of melted bodies, 565—the effect of electricity on eels, 602—his electrifying machine, 604.
 Vanadinite, mineral, XV. 106.
 Vanadium, VI. 494; XV. 66.
 VANBRUGH (Sir John), architect and dramatist, XXI. 515—his style of architecture, III. 455—his dramatic works, VIII. 162; XXI. 173.
 VANCOUVER ISLAND, XXI. 519; XVII. 39—climate of, 612—gold-deposits in, XVIII. 464.
 Vandals, X. 577—monarchy of, XV. 414—their irruption into Spain, XX. 459—Rome occupied by, XIX. 363.
 Vandellia, a genus of fishes, XII. 253.
 Vander Hoeven, his work on insects, IX. 15.
 Vander Vynckt, XI. 563.
 Vandermonde, on equations, IX. 308, 314.
 Vanderlint (Jacob), on political economy, XVIII. 219.
 Vandevelde (Captain), on fortresses as a means of defence, XXI. 701—on the battle of Montebello, 712.
 VANDERVELDE (William) the younger, marine painter, XXI. 520, 387, 388, 389.
 VANE (Sir Henry), XXI. 522; V. 404, 416—his mission to Scotland, 404.
 Vaneeya, XI. 92.
 Vanellus, genus of birds, XVI. 797.
 Vanessa, XX. 874. See Vanhomrigh.
 — genus of insects, XI. 207.
 Vanga, genus of birds, XVI. 748.
 Vanhomrigh (Miss Esther), IV. 664; XX. 874.
 Vanilla, V. 211—its culture in Mexico, XIV. 717—in Guatemala, XI. 76.
 Vanity, monomania of, XIV. 532.
 VANLOO (John Baptist and Charles Andrew), Flemish painters, XXI. 522.
 VANMANDER (Charles), XXI. 552.
 VANNES, French town, XXI. 522.
 Vansittart (Mr), his financial operations, V. 635—his alteration of the sinking fund, X. 330, 331, 332.
 VANVITELLI (Louis), architect, XXI. 522.
 Vaporization, XI. 270.
 Vapour, XI. 270; XX. 563—in the atmosphere, IV. 182—latent heat of, I. 926—Dalton's researches on, 934—acts as a moving power in the atmosphere, XIV. 646—precipitation of, 652—distribution of aqueous vapour in atmosphere, 657—vapour-tension, 675—air and vapour not uniformly mixed, XVIII. 40—vapour-bath, IV. 507. See Dew, Evaporation, Steam.
 VAR, in France, XXI. 522.
 Varages or Varangians, XIX. 469.
 Varanes, kings of Persia, XVII. 435.
 Varanidæ, serpents, teeth of, XVI. 433.

VAR—VAU

- Varanus, reptile, XIX. 28.
 VARENIUS (Bernhard), first physical geographer, XXI. 523.
 Variable stars, I. 862.
 VARIATION, in music, XXI. 523.
 — of the compass, XXI. 523.
 — of the magnetic needle, XIV. 2, 49; I. 990 (see Needle); changes in it, XIV. 51; annual, 52; diurnal, 53—causes of, 54—variation-charts, 49—compass, 80—transit, 81.
 — of parameters, I. 810.
 VARIATIONS (calculus of), XXI. 523. See Calculus.
 Varieties of animals, what, III. 174—prolific union among, 182—in plants, V. 175.
 Varignon (M.), I. 609, 651—his defence of the new calculus, IX. 676—on hydraulics, XIX. 184, 185.
 Variscite, mineral, XV. 74.
 Varley (Cornelius), on aquatinta engraving, VIII. 802.
 — (C. F.), on electric telegraph, XXI. 108, 111.
 VARNA, a seaport town of European Turkey, XXI. 523—port of, IV. 742—French and British troops at, XIX. 502.
 VARNHAGEN VON ENSE (K. A. L. P.), XXI. 524.
 — Rahel, XXI. 524.
 VARNISH, XXI. 526—Copal, VII. 348—Florence, VIII. 812—for lithographic printers' ink, XIII. 513—use of, in etching, VIII. 811, 812—for papier maché, XVII. 261—varnishes on leather, XIII. 310.
 Varolius (Constantius), or Varoli (Constantio) of Bologna, anatomical discoveries of, II. 759.
 VARRO ATACINUS (P. T.), XXI. 529.
 — (MARCUS TERENTIUS), XXI. 527.
 Varus (Quintilius), X. 575—his disaster in Germany, XIX. 333.
 Varvacite, mineral, XV. 111.
 Vasa (Gustavus). See Gustavus.
 VASARI (Giorgio), XXI. 529—his opinion of Memmi, XIV. 491—of Sebastiano, XX. 29; XVII. 67, 68—on painting, 49 *et seq.*
 Vasco (Gran), Portuguese painter, XVIII. 399.
 Vascular system of the human body, II. 806.
 — tissue of plants, V. 65, 69.
 — system of leaves, V. 88.
 Vase, Etruscan, IX. 359; XVII. 48—Greek, XVIII. 431.
 Vassili (Ivanovitch), XIX. 473.
 VASSAL, XXI. 529.
 VASTO (Il), town of Naples, XXI. 529.
 Vat, immense size of, V. 331.
 Vater (Abraham), on nervous papillæ, II. 816.
 — (JOHANN SEVERIN), XXI. 529—on American languages, II. 680—on the Pentateuch, XVIII. 401, 402.
 Vatican, XIX. 369, 367—library, 410—Mai, librarian of, XII. 96.
 Vaticanus, circus, VI. 734.
 — Codex, XIX. 838.
 VATEL (Emmerich de), XXI. 529—on the balance of power, IV. 387, 388.
 Vattermare (Alexander), on international exchanges of works, XIII. 375.
 VAUBAN (S. le P. de), XXI. 530—on fortification, IX. 815—his first system, 817—his second and third systems, 820—on sieges, 822.
 VAUCANSON (Jacques), XXI. 530—his automatic fluteplayer, III. 137—his artificial duck, IV. 320—museum formed by, XXI. 322.
 VAUCLUSE, in France, XXI. 530—fountain of, VI. 768; XVII. 496.
 VAUD, Swiss canton, XXI. 530; XX. 882—population of, XV. 602.
 VAUDOIS, XXI. 531.
 Vaughan's blowing machine, IV. 797.
 VAULT, XXI. 531; III. 514.
 Vaults, spherical, XX. 730—arched, which intersect each other, or groins, 731—de-

VAU—VEL

- scending vaults, 732—mediæval, 734—fan-vaulting, 735.
 Vauquelin's analysis of cerebral matter, II. 817—of the yolk of wool, XXI. 905.
 Vauquelinite, XV. 106.
 Vauxhall Bridge, XII. 583; XIII. 676.
 Veal, XI. 762.
 Veau morel (M. Caulet de), his work on Mesmerism, XX. 419.
 Vecchia (Citta), in Malta, XIV. 116.
 Vecht, river, XI. 211.
 Vedanta philosophy, XVII. 230.
 VEDAS, XXI. 531; XI. 468.
 VEGA CARPIO (Lope Felix de), XXI. 531; VI. 71—his plays, VIII. 146—novels, XIX. 286.
 — mathematical talents of, I. 700—his murder, *ib.*, n. 2.
 Vegetable poisons, XIV. 436—(see Poisons)—vegetable oils, XVI. 494 (see Oils)—vegetable productions of Europe, IX. 385, 386.
 Vegetables, electricity produced by, VIII. 570—effects of electricity on, 603—monstrosities, XV. 504—worship of, in Egypt, 765—Ingenhousz's experiments on, XII. 380—their influence on the animal creation, *ib.*—action of poisons on, XVIII. 134. See Botany, Plants, Timber, Trees, &c.
 Vegetation, a chemical process, VI. 523.
 — physiognomy of, in different parts of the globe, V. 223—statistics of, 224—zones of, *ib.*, 226; zones of marine, 229—of the polar regions, XVIII. 178.
 VEGETIUS-REXATUS (Flavius), XXI. 532—on the Roman armies, III. 629, 623, n. 5.
 — (PUBLIUS), XXI. 532.
 VEGLIA, island, XXI. 532.
 VEHMIC, or Fehmlic Courts, of Germany, XXI. 532.
 VEII, an ancient Etrurian city, XXI. 532.
 Veins in anatomy, II. 792; III. 65; XVII. 653—their valves, II. 794—origin and termination of, *ib.*—calibre and area, 795—mutual communications, 796, 795—generally accompany arteries in their course, 795; but not always, *ib.*—are they more superficial and less sheltered than arteries? 796—surgical treatment of dilatation of the, XX. 829.
 — mineral, XV. 177, 219, 220, 221—granite, 186—trap, 189—contents of, 192—of lava, 191—system of, 220—their affinities for particular rocks, 221—gold veins become attenuated downwards, 231—lead veins, 244—metals almost always found in, XVII. 621—Werner on the formation of, XXI. 834.
 VELASQUEZ (D. R. de S. y), Spanish painter, XXI. 533; III. 712; XVIII. 75—compared with Murillo, XV. 694.
 Velellidæ, zoophytes, XXI. 1001.
 VELEZ BLANCO, XXI. 534.
 — (MALAGA), XXI. 534.
 — (RUBIO), XXI. 534.
 Velia, genus of insects, IX. 164.
 Velifer, genus of fishes, XII. 288.
 Velleius, Patriculus, XXI. 243, 244.
 VELLETRI, Italian city, XXI. 534—legation of, XVII. 243.
 VELLORE, Hindu town, XXI. 534.
 VELLUM, XXI. 534—early printing on, XVIII. 530. See Parchment.
 Velocipedes, XVIII. 754.
 Velocity, VIII. 344—principle of virtual and actual, I. 651—scale of, VIII. 352—of electricity, 543—of discharged bullets, XI. 115 *et seq.*—of running water, 141, 142; XIX. 188—of machinery, XIV. 404—of air, XVIII. 58, 59—rivers, XIX. 182, 201; XVII. 601—of ships, XX. 6, 7—of light, XIII. 450; XVI. 552—of wind, XIV. 651—law of virtual velocities, XX. 548—relation of power to, in steam vessels, 663.
 Velschius (G. H.), his intended edition of Edrisi's Geography, VIII. 412.
 Veltheim (Count), on cross-breeds of horses, XI. 635.
 VELVET, XXI. 534—method of dyeing it black, VIII. 306.

VEL—VER

- Velvet cotton, manufacture of, in France, X. 252.
 Vena contracta, XII. 103, 104.
 Venables (Col. R.), on pike-fishing, III. 159—on angling, 163.
 Venaissin, French province, X. 277.
 Venation of leaves, V. 88.
 Vendace, fish, XII. 243—in Dumfriesshire, VIII. 238.
 VENDÉE, XXI. 534—war in, X. 81; XXI. 700.
 Vendetta, XII. 449.
 VENDOME, in France, XXI. 535.
 Venecontes, Caledonian tribe, VI. 74.
 VENEERING, XXI. 535—in making encaustic tiles, XVIII. 441—vencer-saws, XIX. 677.
 Venema, on imputed sin, XXI. 205.
 Veneration, XVII. 562.
 Venereal disease, introduction into Europe, XX. 817—early writers on, *ib.*, n. 3—treatment of, 834.
 Veneridae, family of mollusks, XV. 350.
 Venerupis, genus of mollusks, XV. 350—fossil, XVII. 108.
 Venesection, XX. 830. See Blood-letting.
 Venetus (Paulus), XIV. 2.
 VENEZUELA, in South America, XXI. 535—height of mountains in, XVII. 645.
 VENICE, XXI. 537; XII. 651—Cosmographical Academy at, II. 62—war with the Algerines, 570—whether the parent of Gothic architecture, III. 446, 447—church of St Mark, 448—school of painting, 710—siege of Athens, IV. 173—government of, XIII. 644, 645—commerce, causes of its increase, VII. 186—glass manufacture, X. 659—libraries, XIII. 416—rise of newspapers in, XVI. 202—Bank of, XV. 488—early printing at, XVIII. 522, 532—her power advanced by the Crusades, VII. 530—rivalry with Genoa, X. 454—early navigation of, XVI. 2—shipping, rise of, XX. 118, 124—invaded by Napoleon, 791—overthrow of the Republic by Napoleon, XV. 791—Venice white, XIII. 302—defence against the Austrians, in 1850, XII. 659—weights and measures, XXI. 806—war with the Turks, 369. See Lombardo-Venetian Kingdom.
 Venison, IX. 762.
 VENLO, or VENLOV, in Holland, XXI. 539.
 VENOSA, a town of Naples, XXI. 539.
 VENTILATION, XXI. 539—of collieries, &c., VII. 123—of mines, XV. 225—of hot-houses, XI. 725, 756—bee-hives, IV. 574—by means of gas, X. 427—conducive to health, XIV. 440—ventilating shafts in the streets of London, III. 497—its importance for the preservation of timber, XXI. 279—in ships, 280—failure of Davy in attempting to ventilate the House of Commons, VII. 670.
 VENTNOR, in Isle of Wight, XXI. 542, 862.
 Ventricles, of the brain, III. 53—of the heart, 63; XVII. 661.
 Ventriculites, fossil sponges, XVII. 93.
 VENTRILOQUISM, XXI. 542; XVII. 680.
 Venturi (Prof.), on hydrodynamics, XII. 73, 117, 119, 120, 131—on the viscosity of water, I. 887.
 VENUS, goddess, XXI. 543—nativity of, XV. 764—of Paphos, XVII. 261—a temple of, in Sicily, XX. 245.
 — de Medici, IX. 666.
 — fly-trap, plant, V. 108.
 — genus of mollusks, XV. 350, 347.
 — PLANET, XXI. 543; IV. 65, 90—phenomena of, 51—variations of its orbit, 106—atmosphere of, 66—transit of, 62, 63—perturbation of the earth by, I. 825. See Astronomy.
 VERA, town in Spain, XXI. 543.
 — CRUZ, Mexican State, XXI. 543; XIV. 725, 718—city founded by Cortes, VII. 418—plundered by the bucaniers, V. 711.
 Veracity of the Delty, XXI. 191.
 — in a historian, XI. 546.
 Verany (Signor), on mollusks, XV. 327.

VER—VER

- VERAQUA (Santiago de), XXI. 543.
 Verardo (Charles), on historical plays, VIII. 145.
 Verati, work of, on animal magnetism, XX. 445.
 Verbera, V. 202—oil of, XVI. 497—regarded with superstition by the Druids, V. 202.
 Verbenaceæ, nat. order of plants, V. 202.
 Verbruggen, XXI. 174.
 Verbs, X. 761, 790—inflection of, XIII. 189—in Egyptian grammar, XI. 424, 427.
 VERCELLI, in Sardinia, XXI. 543; XIX. 640.
 VERDE, Islands of Cape, XXI. 543; II. 229.
 — antique, XV. 92.
 Verdegris, VII. 351.
 VERDEN, XXI. 546.
 VERDUN, French city, XXI. 546.
 Vere (Sir Francis), XI. 572.
 VEREJA, Russian city, XXI. 546.
 VERELIUS (Olaus), XXI. 546.
 Veretelliformes, zoophytes, XXI. 986.
 VERGE, in law, XXI. 546.
 VERGERS, XXI. 546.
 VERGILIUS (Polydorus), XXI. 546.
 Vergniaud, X. 82, 83.
 Vermego, river, IV. 823.
 Vermetus, genus of mollusks, XV. 383—fossil, XVII. 101.
 VERMICELLI, XXI. 546; XIII. 758.
 Vermicularia, fossil mollusks, XVII. 101.
 Vermiculite, mineral, XV. 80.
 Vermiformes, zoophytes, XXI. 986.
 Vermigrada, zoophytes, XXI. 984.
 VERMILION, XXI. 546; VI. 498.
 VERMIN, XXI. 546—on the domestic animals, 579.
 VERMONT, American state, XXI. 550, 419—wine of, 888.
 Vernation, V. 86.
 VERNET (C. J.), painter, XXI. 551.
 — (Horace), III. 719.
 Verneuil (M. de), on the geology of Spain, XX. 484, 485.
 VERNON (Edward, Admiral), XXI. 551—his expedition against Portobello and Cartagena, V. 458.
 — French city, XXI. 551.
 — (Mount), Washington's residence, XXI. 753, 761, 764.
 Vermuyden, an embanker, VIII. 643.
 VERONA, in Italy, XXI. 551—Academy of Sciences at, II. 63—amphitheatre, 731—ancient painters of, XVII. 69—Congress of, in 1822, X. 184.
 VERONESE (Paul), painter, XXI. 552; VI. 59; III. 710; XVII. 71. See Cagliari.
 Veronica, legend of her handkerchief, XII. 765.
 Veronicella, genus of mollusks, XV. 374.
 Verres, impeachment of, XIX. 322—Cicero's oration against, VI. 717.
 Verri (Count de), on political economy, XVIII. 222.
 Verrachio (Andrea), painter and sculptor, XIX. 861.
 Verrucca, fossils, XVII. 101.
 VERSAILLES, XXI. 552—aqueduct from Marly to, III. 336—palace of, 453—population of, X. 277—accident on the railway of, 219.
 Verse, in poetry, XIX. 254.
 VERSETZ, Hungarian city, XXI. 552.
 VERT, in heraldry, XXI. 552; XI. 324.
 — and venison, XX. 209.
 Vertebra, human, III. 4, 5, 6, 7, 8—muscles of the, 38—of mammalia, 75; of birds, 83; of reptiles, 86; of fishes, 89; of serpents, XIX. 43.
 Vertebrata, II. 771, 772; IX. 59; XII. 205; characteristics of, III. 185, 192—classes of, 192—fossil, XVII. 115—number known, 631.
 Vertical, in astronomy, IV. 1.
 Vertigo, disease, in the domestic animals, XXI. 574.
 VERTOT (René Aubert de), XXI. 552.
 VERTUE (George), XXI. 553.
 Vertunien (Francis), his Scaligeriana, II. 737.
 VERULAM, XXI. 553. See Bacon.
 Verus (Lucius), XIX. 344.

VER—VIC

- Vervain, order of plants, V. 202—esteemed by the Druids, VIII. 188.
 VERVIERS, in Belgium, XXI. 553.
 VESALIUS (Andreas), XXI. 553; XX. 817; II. 758—his character of Dubois or Sylvius, 757—his anatomical discoveries, 758.
 Vespa, genus of insects, IX. 197.
 VESPASIAN, Roman emperor, XXI. 553; XIX. 339—his war with the Jews, XII. 773; VIII. 472—Egypt under, *ib.*—Coliseum built by, II. 730.
 VESPER, XXI. 553.
 Vespertilionidae, XIV. 146.
 Vespertilio, XIV. 149.
 Vespriaræ, insects, IX. 196.
 VESPUCCI (Amerigo), navigator, XXI. 553—first published an account of the New World, X. 472—his voyages to Brazil, V. 279.
 Vessels of plants, anatomy of, V. 69; spiral, 70; laticiferous, 71, 72; physiology of, 71.
 VESTA, XXI. 554.
 — match, XIV. 352.
 — planet, IV. 69—discovery of, *ib.*; III. 808.
 VESTALS, XXI. 554.
 VESTIBULE, XXI. 554.
 — of the ear, III. 46.
 VESTRY of a church, XXI. 554.
 Vesuvian, mineral, XV. 85.
 VESUVIUS, XXI. 554, 505; XX. 237, 240—electricity of the air on, VIII. 578—eruption which destroyed Herculaneum and Pompeii, XI. 344—height of the mountain, XVII. 643; XII. 637.
 VESZPRIM, or Wespriem, town in Hungary, XXI. 554.
 Vetches, culture of, III. 312, 328—folding sheep upon, 329.
 Veteranio, VII. 303.
 VETERINARY SCIENCE, XXI. 554; XI. 671; II. 357.
 Veto Act, V. 669; VI. 405.
 Vettori (Francisco), Machiavelli's letter to, XIII. 781.
 VEVAY, Swiss town, XXI. 580.
 Vexillum, in botany, V. 124.
 Viadana (L.), XV. 720.
 VIADUCT, XXI. 580; XII. 597—over Tweed at Berwick, IV. 682—Crumlin, XII. 597—on railways, XVIII. 762.
 VIANA, in Portugal, XXI. 580.
 VIAREGGIO, XXI. 580.
 VIATKA, XXI. 580, XIX. 521.
 VIAZMA, XXI. 580.
 Vibration of musical instruments, II. 107, 109—of a musical string, XV. 702—of air, XVIII. 70.
 Vibrio, genus of animalcules, III. 200.
 Viburnum, genus of plants, XVII. 764.
 VICAR, XXI. 580; VIII. 743; XVII. 309.
 Vicary (Thomas), II. 760.
 Vicat on mortars, XX. 714.
 Vice, Aristotle on, III. 565—according to Socrates, a mistake of the judgment, XX. 398, 401.
 Vice-Chancellor of Oxford, XXI. 456.
 VICENZA, XXI. 580.
 VICH, XXI. 581.
 Vichy, mineral waters of, XV. 39.
 Vici on hydraulics, XII. 74; VII. 2.
 Vick (H. de), his clock, VII. 2.
 VICO (G. Battista), XXI. 581—on the growth and decay of nations, XI. 544 *et seq.*
 — lake, XVII. 242.
 Vicq D'Azyr on the brain, II. 762, 820.
 Vicramaditya, Indian king, XVII. 519—era of, VI. 676.
 Victor Amadeus, Valdenses persecuted by, XXI. 500.
 — (CLAUDE PIERRIN), marshal of France, XXI. 582; X. 154.
 — (J.), his works on insects, IX. 22.
 — mesmeric patient, XX. 422, 423.
 — (SEXTUS A.), Latin historian, XXI. 582.
 Victoria, XIV. 711, 712.
 — and Albert, steam-yacht, described, XX. 665.
 — Bridge, at Montreal, XV. 522.
 — Docks, London, XIII. 661.

VIC—VIL

- Victoria Falls, in the Zambesi, XVII. 608.
 — in Hong-Kong, XI. 615.
 — Land, X. 475; XVII. 584.
 — Park, London, XIII. 668.
 — planet, IV. 91.
 — Port, in New Zealand, XVI. 235.
 — or Port-Phillip, XXI. 582—history of, IV. 286—gold discovery in, 289—produce of the gold-fields, 290—population and immigration, 291—commerce, 292—Times newspaper on the recent progress of, *ib.*—geological survey of, XV. 205—gold-fields of, 232—tin from, 241—yield of gold in, 463, 464. See Australia.
 — town in Mexico, XIV. 728.
 — water-lily, V. 181—discovery of, XI. 82.
 — president of the Mexican republic, XIV. 711, 712.
 — Queen, the accession of, V. 665; marriage, 667; visit to Glasgow, X. 647; Eu, 220; Paris, 238; and Jersey, XII. 730.
 Victualling establishments, at Deptford, VIII. 80; at Chatham, 82; Portsmouth, XVIII. 379; Plymouth, VIII. 84, XVIII. 20; late Victualling Board, VIII. 86.
 Vicuna, IV. 823, 824; XVII. 473.
 VIDA (Marco Girolamo), XXI. 582.
 Vidi (M.), his aneroid barometer, IV. 459.
 Vidua, genus of birds, XVI. 761.
 Vidusta, river, XII. 785.
 VIELLE, instrument, XXI. 583.
 Viellot on birds, XVI. 729, 730, 731.
 VIEN (J. Marie), painter, XXI. 583.
 VIENNA, XXI. 583—Academy of Surgery, II. 62; of the Fine Arts, 68—university, IV. 318; XXI. 492—libraries, XIII. 417, 419—newspapers of, XVI. 201—porcelain factory, XVIII. 436—provisions made by the Congress of, V. 614—conferences of, in 1855, XIX. 507—besieged by the Turks, XXI. 369, 370—measures, 806—weights, 807.
 VIENNE, in France, XXI. 586.
 — (HAUTE), in France, XXI. 586; XII. 626.
 VIERZON, French city, XXI. 587.
 VIETA (Francis), XXI. 587; X. 504—his improvements in algebra, I. 558; II. 485, 486, 555—in trigonometry, I. 559, 560—his Apollonius Gallus, III. 302.
 Vieussens (Raymond), anatomical discoveries of, II. 763, 764.
 Vieyra (J. F.), V. 282.
 VIGAN, town of France, XXI. 587.
 VIGER (François), XXI. 587.
 VIGEVANO, in the kingdom of Sardinia, XXI. 587.
 VIGGIANO, town in Naples, XXI. 587.
 VIGILANTUS, reformer, XXI. 587.
 VIGNOLA, architect, XXI. 588; III. 452.
 Vigny (Alfred de), French poet, XVIII. 117—his Cinq Mars, XIX. 290.
 VIGO, town in Spain, XXI. 588.
 Vigogna, in zoology, XIV. 205.
 Vigors (Mr), his classification of animals, III. 173—of birds, 191, n. 2—on generic divisions of animals, XVI. 736.
 Vikinger, VIII. 657; XIX. 745.
 Vilette's burning mirrors, VI. 9, 10.
 Villa, Roman (modern), XIX. 369.
 — (A.), entomologist, IX. 18.
 — FRANCA, XXI. 588—peace of, in 1859, XIX. 645.
 Villa-Real, in Spain, XXI. 588.
 Villa-Rica, climate of, V. 293.
 VILLAJOSOSA, in Spain, XXI. 588.
 VILLALON, in Spain, XXI. 588.
 Villaponda on Solomon's temple, III. 439.
 Villaret-Joyeuse, French admiral, V. 554.
 VILLARS (L. H., Duke of), marshal, XXI. 588; V. 451.
 Villarsite, mineral, XV. 80.
 Ville (A. de), on fortification, IX. 814.
 — (de la), on Persian stones, VI. 556.
 Ville-Franche, X. 405; meteorolite found near, XIV. 631.
 Villegagnon (N. D. de), V. 281.
 Villegas, poetry of, XVIII. 115.
 Villèle (M. de), X. 183—fall of his ministry, 194.

VIL—VIN

- VILLENA, a Spanish city, XXI. 589.
 VILLENAGE, XXI. 589—a species of slavery, XX. 321.
 Villeneuve (Admiral), XVI. 138; X. 136.
 Villeroi (Marshal de), his campaigns against the Duke of Marlborough, V. 448 *et seq.*
 VILLERS (C. F. D. de), XXI. 589.
 — on balance of power, IV. 390.
 Vill of the Ileum, III. 60—of the mucous membrane, XVII. 660.
 Villiers (Charles), his fictitious work on mesmerism, XX. 424.
 — (Charles de), his work on insects, IX. 7.
 — (F.), his work on insects, IX. 17.
 — (GEORGE), Duke of Buckingham, XXI. 589—his visit to Spain with Prince Charles, V. 387—impeachment of, 390—war with France excited and mismanaged by, 391—assassination of, 392—Bacon's letters to, IV. 354, 356—his connection with Bacon, 354.
 — (GEORGE), second Duke of Buckingham, XXI. 589—his Rehearsal, VIII. 161, 202.
 — and Bowring's Report on our commercial relations with France, X. 253; extract from, 258.
 VILLOISON (J. B. G. D'Anse de), XXI. 589.
 VILNA, or Wilna, XXI. 589, 590; XIX. 521.
 VILVOORDEN (F. Vilvorde), town in Belgium, XXI. 590.
 Vimiera, battle of, V. 663; XXI. 821, 708, 713.
 Viminal Hill, XIX. 356, 357.
 Vimont (Dr), his collection of skulls, XVII. 563—on the skulls of animals, 565—on the varied size of the frontal sinus, 567, *n.*
 Vinago, genus of birds, XVI. 794.
 VINAROS, town of Spain, XXI. 590.
 Vince (Dr), great atmospheric refraction observed by, XVI. 691.
 — (Mr), his experiments on hydraulics, XII. 148, 161, 162—on the resistance of fluids, 161.
 VINCENNES, in France, XXI. 590.
 Vincent (Bory St), on lizards, XIX. 28—his division of the indigenous Americans, II. 676.
 — (Dr), on the Greek verb, VIII. 92 and *n.* 1.
 — (Dr), on the periplus of the Erythrean Sea, II. 209.
 — (EARL St), XXI. 590; XVI. 134; V. 559.
 — (J. C. Maria), VIII. 374.
 — Cape, battle of, V. 559; XII. 748; XVI. 134—Rodney's victory at, V. 493.
 — Gulf of, XXI. 590.
 — (St), island of, XXI. 590—culture of the bread-fruit in, V. 301.
 VINCI (Leonardo da), XXI. 590—first distinctly stated the principle of the effects of oblique force, I. 718—his character as a painter, III. 709; XVII. 63, 73—on experiment, X. 377, *n.* 1—on pictorial invention, XV. 737—his anatomical knowledge, XIV. 458—his fresco of the Last Supper, XV. 3.
 VINCULUM, in algebra, XXI. 591.
 Vindingius (Paul), on anonymous books, IV. 711.
 Vine, order of plants, V. 187—grape-vine, *ib.*—dwarf-vine, XII. 445.
 — culture and variety of, XI. 707—in the Two Sicilies, XX. 248—France, X. 247—Palestine, XVII. 190—Spain, XX. 489—Portugal, XVIII. 397—Russia, XIX. 520—mode of training in Lombardy, XIII. 656—in Madeira, 798—vine disease, X. 246 *n.*, 247. See *Oidium*, Vineyards.
 Vinegar, IX. 760, 765—making of, 767—for preserving vegetables, 768.
 — Bible, XVIII. 543.
 — eel, III. 200.
 — Hill, XII. 499.
 — plant, V. 217.
 Vinery, XI. 727—kinds of vines for, 708.
 VINET (A. R.), XXI. 591—his hymns, XII. 190.

VIN—VIS

- Vineyards, ancient Egyptian, VIII. 427—in the Crimea, VII. 503—in New South Wales, IV. 280—in Prussia, XVIII. 668. See *Vine*, *Wine*.
 Vinland, II. 698.
 VINNITZA, Russian town, XXI. 592.
 Vinovium, VIII. 267.
 VINTIMIGLIA, Italian town, XXI. 592.
 VIOLA, musical instrument, XXI. 592; XV. 709—d'Amore, XXI. 592—di Gamba, *ib.*
 Violaceæ, nat. order of plants, V. 183.
 Violet, dyeing of, VIII. 311.
 — order of plants, V. 183.
 Violette (M.), on the preparation of charcoal for gunpowder, XI. 154, *n.*
 VIOLIN, XXI. 592; XV. 709—Cremona violins, VII. 491.
 VIOLONCELLO, XXI. 592; XV. 709.
 VIOLONE (or Double Bass), XXI. 592.
 VIOTTI (G. B.), XXI. 592.
 Viper, XIX. 70—Fontana on the poison of, IX. 753—used as a remedy for consumption, 763—poison of, XIX. 45—flesh as diet, 49—distribution of, 52—poisonous bite of, XIV. 440.
 Vipera, genus of serpents, XIX. 70.
 VIRE, a town of France, XXI. 593.
 Virey, his definition of animal and plant, III. 169—his classification of animals, 184—on spiders, 377—on the instincts of insects, IX. 55.
 VIRGIL, XXI. 593—translation of, by Gavin Douglas, VIII. 118, 119—poetry of, XVIII. 95, 104—patronised by Mæcenas, XIII. 807—his description of the horse, XI. 633—on breeding horses, 636—Warton's edition and translation of the Eclogues and Georgics, XXI. 733—Pitt's translation of the *Æneid* compared with that of Dryden, XVIII. 721—Cunningham's editions, VII. 587—on dew, 765.
 — (Polydore). See *Vergilius*.
 Virgilia lutea, XVII. 762.
 Virgin (General), his system of fortification, IX. 836.
 — Islands, XXI. 599.
 — Gorda, island, XXI. 599.
 VIRGINIA, XXI. 597; 419—debt of, 428—colonisation of, 432—wines, 888—pine timber of, 275—tobacco, 293, 294—newspapers of, XVI. 195.
 — Roman virgin, XIX. 300.
 Virginité, signs of, XIV. 428.
 Viriathus, insurrection of, XX. 458.
 Virility, XIV. 425.
 Virot on the Deists, VII. 701.
 Virtue, Aristotle on, III. 558, 562, 563; XV. 558—conditions of, 560—principle of, 561—principles concurrent with, 564—measure and practical rule of, *ib.*—Socrates on, XX. 378.
 Vis inertia, VIII. 330—vis insita, *ib.* 323.
 Viscidity, XX. 749, 750—of water, XIX. 197.
 Visconti, Italian family, XII. 650; XVII. 497, 499.
 Viscosity of fluids, I. 887.
 VISCOUNT, XXI. 600; XI. 336.
 Viscous or plastic theory of glacial motion, X. 639.
 Visdelon's account of the Chinese book, Y-king, VII. 243.
 VISEU, Portuguese city, XXI. 600.
 VISHNEI, or Vishnou, XXI. 600; V. 723; VII. 716; XI. 468; XV. 762.
 VISHNEI-VOLOTCHOK, town in Russia, XXI. 600.
 Visigoths, X. 3, 727, 728.
 Vision, XIV. 565; XVII. 677, 678—observations on the new theory of, I. 65—a fallacy in Berkeley's work on, 244—chief aim of Berkeley's work, 164—misapprehensions of the ancients on this subject, *ib.*—Voltaire's explanation of, 165, *n.*—progress made previously to Berkeley, 167—Dr Young on the physiology of, 900—Wheatstone on, 925—acute in the Arabs, III. 348—Aristotle on, 549—single vision with two eyes, XIV. 573; XIII. 462; XVII. 678—field of vision, XIV. 572—binocular

VIS—VOL

- vision, XX. 689—erect vision by inverted image, XIV. 574—organs of vision in fishes, XII. 291—in mollusks, XV. 323—myriapoda, 747—bees, IV. 575—sense of, in man, XIV. 565; XVII. 677. See *Apparitions*, *Blind*, *Eye*, *Optics*.
 Vision (The), clipper-ship, XX. 193.
 VISTULA, river, XXI. 600; XVII. 605, 647; XIX. 516; XVIII. 662.
 Vitaceæ, nat. order of plants, V. 187.
 Vital phenomena, XVII. 655—vital statistics, XVIII. 836.
 VITEBSK, in Russia, XXI. 600.
 Vitellio on optics, XVIII. 158—on light, XIII. 449; XVI. 523.
 Vitellius, Roman emperor, XIX. 339.
 VITERBO, in Italy, XXI. 600—delegation, XVII. 243.
 Vitigis, king of the Goths in Italy, XII. 641.
 VITORIA, Spanish city, XXI. 601; II. 440—battle of, V. 613; XXI. 826.
 VITRÉ, a town of France, XXI. 601.
 Vitreous humour of the eye, III. 44; XVII. 678.
 — electricity, VIII. 535, 537—discovery of, 525.
 Vitriified forts. See *Forts*.
 Vitrina, mollusca, XV. 373.
 Vitriol, green or iron-red, blue, white, cobalt, XV. 97, 98.
 VITRUVIUS POLLIO (Marcus), XXI. 601—as an architect, III. 431—on architecture, 432—on the origin of the Doric, Ionic, and Corinthian orders, 441, 442—little merit of his works, 450—modern followers of, *ib.*, 477—revival of his architectural rules in Italy, 451—on dials, VII. 774—on encaustic painting, XVII. 52—his description of Roman baths, IV. 505. See *Architecture*, *passim*.
 VITRY-LE-FRANÇAIS, XXI. 601.
 VITTORIA, in Sicily, XXI. 601.
 — in Spain. See *Vitoria*.
 Viverra, in zoology, XIV. 166.
 Viverridae, dentition of, XVI. 460.
 VIVERO, XXI. 601.
 VIVES (J. L.), or Ludovicus, XXI. 601; I. 15—ancients and moderns, compared by, 30.
 — a disease in cattle, XXI. 564.
 Vivian (Andrew), his connection with Trevithick, I. 882.
 Viviani, III. 301; IV. 450—his restoration of the conics of Apollonius, XX. 300.
 Vivianiaceæ, nat. order of plants, V. 184.
 Vivianite, mineral, XV. 100.
 Viviparous animals, II. 772.
 VIZAGAPATAM, XXI. 601, 602.
 Vizetelly, his patent for plates for printing surfaces, XVIII. 553.
 Vizir, Turkish, XXI. 379.
 Vlacq (Adrian), on logarithms, XIII. 554.
 VLADIMIR, in Russia, XXI. 602; XIX. 521—university of, 532.
 — king of Russia, XIX. 471.
 Vlaming, his discovery of the island of Amsterdam, IV. 268.
 VLISSINGEN (or Flushing), Dutch town, XXI. 602.
 Vocation, or calling, in theology, XXI. 218.
 VOCATIVE CASE, XXI. 602; X. 749.
 Vochysiaceæ, nat. order of plants, V. 191.
 VOET (Gisbert), XXI. 602—his enmity to Descartes, VI. 279.
 — (JOHN), XXI. 603.
 — (J. E.), his works on insects, IX. 6.
 Vogel (Dr), his expedition to Africa, X. 479—his description of the Trona Lakes of Fezzan, IX. 531—on the botany of Fezzan, *ib.*
 VOGHERA, in Sardinia, XXI. 603.
 Vogt (M.), on the mollusca, XV. 337.
 — on rare books, IV. 709.
 Voice, XVII. 679—in man, III. 3, 50—in brutes, 101—mechanism of, XV. 708—compasses of voices and instruments, 714.
 VOITURE (Vincent), XXI. 603.
 Volborthite, mineral, XV. 104.
 Volcanic rocks, XV. 131, 155—form and positions of, 190—origin of, 192—vol-

VOL—VOL

- canic districts of Italy, XII. 636—volcanic formations, XVII. 587, 589—linear arrangement of, *ib.*—number of, *ib.*—on the coast line of the Pacific, 590.
 VOLCANOES, XXI. 603—of Arabia, III. 357—Europe, IX. 384—Iceland, XII. 198, 201—Japan, 689—Java, 702—in Hawaii, XVIII. 271—in Kamtschatka, XIII. 40—Mexico, XIV. 714—Nicaragua, XVI. 244—Sumatra, XX. 802—San Salvador, XIX. 623—theory of meteoric stones projected from, XIV. 633—ejection of fish by, XII. 260—great age of volcanoes, XV. 218—distance to which volcanic ashes have been carried, VI. 774—antarctic volcano, X. 475—Dolomieu on, VIII. 95, 96—Davy on, VII. 672—volcanic products as materials for mortars, XX. 714—mud volcano of Maccaluba, III. 394; X. 632; of Iceland, XII. 202; Java, 703; New Zealand, XVI. 232; small ones near Modena called Salzes, III. 293. See *Vesuvius*, &c.
 VOLGA, river, XXI. 607; IX. 384; XVII. 606, 647; XIX. 515.
 VOLHYNIA, in Russia, XXI. 607; XIX. 521.
 Volition, XIV. 582—power of, in overcoming pain, XX. 416; XIX. 111, 112—laws of, 118. See *Will*.
 VOLNEY (C. F. C., Comte de), XXI. 608—on Idumea, XII. 358, 359—on the Druses, VIII. 197, 199.
 VOLOGDA, XXI. 608; XIX. 521.
 Vologeses, XVII. 312.
 VOLSCI, XXI. 608.
 VOLTA (Alessandro), XXI. 608; I. 737 and *n.* 2, 961—his early experiments, *ib.*—his electrophorus and condenser, *ib.*—his straw electrometer, 962—on atmospheric electricity, *ib.*—his eudiometer, *ib.*—practical character of his inventions, 963—his invention of the pile known by his name, 739, 964; VIII. 530; XXI. 609—his letters to Cavallo, I. 963—Copley Medal conferred on, *ib.*—his theory of electro-motion, 964—his description of the pile, *ib.*—distinctions conferred on, 965—death and scientific character, *ib.*, 966—contrasted with Galvani, 958—experiments of, VIII. 531—his theory of hail, 586—his electrophorus, 606—condensing electrometer, 614—flame electrometer, 622—electric lamp, 625—electric pistol, 626—his discoveries, XXI. 609.
 Volta-electric induction, I. 979.
 Voltaic battery, its use in blasting, IV. 757.
 — ELECTRICITY, XXI. 609; VIII. 530; I. 963 *et seq.*—progress of, 966—decomposition by means of, VII. 668, 669—reanimation of drowned persons by, VIII. 183. See *Pile of Volta*, and *Volta*.
 — lights, in lighthouses, XIII. 480.
 — pile, XXI. 609. See *Volta*, and *Pile of Volta*.
 VOLTAIRE (F. M. A. de), XXI. 656—his estimate of Montaigne, I. 53—of La Rochefoucauld, 54—on innate ideas, 251—clearly understood Berkeley's theory of vision, 165, *n.* 1—Madame de Staël's division of his literary life into two epochs, 277—advocated liberty at one time and necessity at another, 278—on the force of a moving body, 656—helped to establish the Newtonian philosophy in France, 693—his character of La Bruyère, V. 704—his Commentary on Beccaria, IV. 557—his visit to Congreve, VII. 248—his History of the Crusades, 527—on the Italian opera, VIII. 147—his improvement of theatrical costume, *ib.*—his dramatic works, *ib.*—on Dryden, 203—on the moral doctrines of Christ, XII. 762—his opinion of Machiavel, XIII. 781—poetry of, 117—romances of, XIX. 288—his character of John Bernoulli, IV. 674—his opposition to sacerdotal power, XIV. 462—on Rollin's Ancient History, XIX.

VOL—WAA

- 251—his opinion of Pope, XVIII. 324—of Massillon, XIV. 344—his friendship with Frederick the Great, XVIII. 654—on the Abbé Dubois' work on Poetry and Painting, VIII. 228—on Racine's Tragedies, XVIII. 745—on the Man of the Iron Mask, XII. 537.
 Voltaite, mineral, XV. 97.
 Voltameters, I. 984; XXI. 619.
 Voltatype, I. 987; XXI. 635. See Electrotrope.
 VOLTERRA, XXI. 670.
 VOLTURNO, XXI. 670; XII. 638; XX. 237.
 Voltzine, mineral, XV. 121.
 Volucella, genus of insects, IX. 242.
 VOLUME, XXI. 670.
 Voluntary Controversy, XVIII. 500.
 — system of supporting ministers, I. 542.
 Volunteer armaments, XXI. 700—volunteers of 1803, V. 597.
 Voluspa, XV. 767.
 Voluta, genus of mollusks, XV. 385.
 VOLUTE, in architecture, XXI. 670; III. 514—Ionic, 465, 515.
 Volutidae, family of mollusks, XV. 384—fossil, XVII. 110.
 Volvaria, genus of mollusks, XVII. 110, 111.
 Volvox, genus of animalcules, III. 199.
 Vomer, bone of the head, III. 23.
 — fish, XII. 297—fossil, 345.
 Vondel, Dutch dramatist, XI. 591.
 VONDET, XXI. 670.
 Voorhies (W. Van), on the population of California, VI. 98.
 Voracity, cases of, VIII. 23—of the pike, III. 158.
 VORONEJ, in Russia, XXI. 670, 671; XIX. 521.
 VÖRÖSMÁRTY (M.), Hungarian poet, XXI. 671; XII. 20.
 VORST (Conrad), XXI. 671.
 Vorticella convallaria, XV. 321.
 Vos (Martin de), Dutch painter, XXI. 671.
 — (SIMON DE), XXI. 671.
 VOSGES, in France, XXI. 671; XIX. 143.
 Voss (J. Heinrich), XXI. 672.
 VOSSIUS (Gerard John), German scholar, XXI. 672—on the extent of the Deluge, VI. 722.
 — (ISAAC), XXI. 673—on Apollo, III. 299.
 Vouet (Simon), painter, XVII. 76.
 Voussours of right arches, XX. 728.
 Voting by ballot, IV. 399, 400.
 Vowels, pronunciation of, XVII. 679—in Egyptian language, XI. 414—vowel-points, XVII. 521—in short-hand writing, XX. 676.
 Voysey on diamonds, VIII. 2.
 VULCAN, XXI. 673.
 VULCANO, island, XXI. 673; XIII. 502; XX. 246.
 Vulgar fractions, III. 597.
 VULGATE, XXI. 673; IV. 701; XIX. 840—inaccurate edition of, XVIII. 543.
 Vulliamy (M.), on clock-making, VII. 19, 21, 22.
 Vulpinite, minerals, XV. 96.
 Valsella, genus of mollusks, XV. 347, 348.
 Vultur, genus of birds, XVI. 738.
 Vulture, XVI. 738; XVII. 633—bearded, 740; black, 739—Californian, 738—cinereous, ib.—fulvous, ib.—gingi, 740—king, 739—vultures in Egypt, VIII. 433.
 — Mount, XX. 236.
 Vulturidae, family of birds, XVI. 738.
 Vulva, III. 71.
 Vynck (Vander), History of Flanders, XI. 563.
 Vyse (General), his discoveries, XI. 370, 411; VIII. 500—value of his researches, 502.

W

- W, letter of the alphabet, XXI. 674.
 Waagen (Dr) on Kup's pictures, XIII. 137.

WAB—WAL

- Wabash, river, XII. 362, 373.
 WACE (Robert), poet, XXI. 674.
 Wacke, rock, XV. 135.
 Wad, mineral, XV. 112.
 Wadan, IX. 528.
 WADDING (Luke), XXI. 674.
 Wade (Thomas) on dry rot, VIII. 207, 208, 209, 212.
 Waders, order of birds, XVI. 794.
 Wadham College, Oxford, XXI. 459.
 Wadi Doan, in Arabia, III. 357.
 — Tuáriak, XVIII. 819.
 WADSTROEM (Carl Berns), XXI. 674.
 Wady, Arabian guardian, III. 352.
 Wagers, law of, X. 394.
 WAGES, XXI. 674—acts regulating, VII. 376, n.—their increase reduces the profit of stock, 386—effect of high prices of provisions on, ib.—effect of their fluctuation on value, XVIII. 248—taxes on, XXI. 47—variations in the natural rate of, ib.—supply of labour not speedily accommodated to these variations, 48—advantages of a rise of, 48—disadvantages of a fall, ib.—raised by taxes on raw produce, 64—combinations to raise, VII. 160—act of 1350 regulating, 161—increased in proportion to taxation, XXI. 41—in Dumfriesshire, VIII. 237—in California, XVIII. 466—in Australia, 467—rise of owing to emigration, ib.—in United States, XXI. 425—of woollen manufactures, 919.
 WAIFS, XXI. 680.
 Waggon, for railways, XVIII. 781, 782, 783.
 Waggon steam boiler, XX. 615, 587.
 Wagler on birds, XVI. 733.
 Wagnerite, mineral, XV. 74.
 Wagram, battle of, X. 152; XXI. 711.
 Wagtail, bird, XVI. 756.
 Wahabyz, III. 363; VIII. 493.
 Wahlberg on the vegetation of Lapland, XIII. 235.
 Wailes (Mr) on the geological relations of insects, IX. 72.
 Waitemata, in New Zealand, XVI. 233, 234.
 Wake (Mr), his account of a defence against the sepoy insurrection of 1857, XVI. 211.
 WAKEFIELD (Gilbert), XXI. 680—Hermann's character of, VII. 586, n. 7.
 — in Yorkshire, XXI. 680; battle of, VIII. 690.
 — (Mr), on the corn laws, VII. 385.
 WAKES, XXI. 682.
 WALACHIA, XXI. 682—language of, IX. 391; XI. 22; XIII. 214—weights and measures of, XXI. 814. See Moldavia.
 Walachians in Hungary, XII. 11—in Turkey, XXI. 378.
 WALCH (J. Georg), German divine, XXI. 684.
 — (J. E. IMMANUEL), XXI. 684.
 — (C. W. FRANZ), XXI. 684.
 — (KARL FRIEDRICH), XXI. 684.
 WALCHEREN, Dutch Island, XXI. 684—British expedition to, V. 607.
 Walchowite, mineral, XV. 124.
 Walckenaer (C. A.), his works on insects, IX. 13—on spiders, III. 390.
 Walckiere de St. Amand, his electrical machine, VIII. 605.
 WALDECK, in Germany, XXI. 684.
 WALDENSES, or Valdenses, XXI. 685. See Valdenses.
 Waldheim (G. F. de), his works on insects, IX. 14.
 Waldheimia, genus of mollusks, XV. 338.
 WALDO, XXI. 685. See Valdo.
 Waldstatter See, XX. 889.
 WALES, XXI. 685—extent in square miles, VIII. 715—cattle, II. 342—invaded by Egbert, VIII. 657—annexed to the English crown, 680—Owen Glendower's insurrections, 687—population, 755—iron manufactures of, XII. 574—Silurian rocks in, XV. 196—carboniferous rocks, 201, 203—gold in, 233—lead mines of, 244—friendly societies in, X. 310—arms of, XI. 323—Calvinistic me-

WAL—WAL

- thodists, XIV. 693—Welsh language, V. 374.
 WALES (Prince of), XI. 336; XIX. 456.
 — (NEW SOUTH), XXI. 685. See Australia.
 Walferdin's thermometers, XXI. 224, 225.
 Walker on the revival of the drama in Italy, VIII. 143, 148.
 — on the orbit of Uranus and Neptune, I. 832.
 — on the discharge of the Tay, XVI. 83.
 — (Sir Baldwin), surveyor to the navy, XX. 137.
 — (Francis), his works on insects, IX. 14.
 — (Dr), professor of natural history in the University of Edinburgh, XII. 684.
 — (Rev. George), XII. 489, 490.
 Walker's rope machine, XIX. 410.
 Walking, muscles employed in, III. 42.
 Walks, garden, XI. 747—edgings of, 748.
 Wall (Dr), on electricity, VIII. 525, 526.
 WALLACE (Sir William), XXI. 685; XIX. 755.
 — (WILLIAM), professor in University of Edinburgh, XXI. 687—on catenarian curves, I. 876—his expression for the reciprocal of an arc, II. 560—his eidograph, VIII. 518—on the loss of weight in beef by roasting, IX. 765.
 — (Mr), of Berwick Mains, his mode of cultivating potatoes, II. 316.
 — (Robert, of Kelly), on the quantity of spawn in salmon, IX. 616, n.
 — (Mr), his character of Hector Boyce, V. 254.
 Wallachia. See Walachia.
 Wallachs, XI. 15.
 Wallenberg (Jacob), Swedish author, XIX. 699.
 WALLENSTADT, lake of, XXI. 687; XX. 889.
 WALLENSTEIN (A. W. E.), Duke of Mecklenburg, XXI. 687; XX. 850.
 WALLER (Edmund), XXI. 688—poetry of XVIII. 122—quotation from, on tea, XXI. 88.
 — (Sir William), V. 431.
 Wallerius, IV. 662.
 Wallflower, V. 117, 136, 137, 140, 141.
 Wallin (Archbishop), Swedish author, XIX. 699.
 WALLINGFORD, in Berks, XXI. 691.
 WALLIS (John), XXI. 691; I. 705, n. 3—his arithmetic of infinites, 694; IX. 671—was the first who founded a system of statics on the equality of the opposite momenta, I. 651—on conic sections, VII. 250—on the quadrature of the circle, XX. 523.
 — (Captain), Tahiti discovered by, XVIII. 280.
 Wallo, XX. 51.
 Walloon language, places where spoken, IV. 601, 615.
 Walls, of Athens, IV. 160, 171—of Rome, XIX. 362—rubble walls, V. 738—retaining, VII. 325—thickness of, 328—on farms, II. 269—earthen, for embankments, VIII. 644—forms of, for tidal harbours, XI. 220—garden walls, 699—hot walls in gardens, 700—river-walls, XVI. 71—pressure of earth, &c., against, XX. 719—resistance of, 720—construction of, 721—arches in oblique walls, 729; in circular, 730—measurement of, V. 736, 740.
 — one of the Orkney islands, XVI. 718.
 WALLSEND, English village, XXI. 691—gas from the coal of, X. 414.
 WALMER, village in Kent, XXI. 691—castle, XIII. 68; death of the Duke of Wellington at, V. 672; XXI. 830.
 Walmesley (Dr Charles) completed the Newtonian theory of the moon, I. 780—notice of his life, ib. n.
 Walnut, order of plants, V. 208.
 — tree, XVII. 764—culture of, XI. 717—wood of, XXI. 278; gun-stocks made of, XI. 100—walnut-oil, XVI. 496.

WAL—WAR

- Walnuts, XVI. 395.
 Walnut-peel, as a dye-stuff, VIII. 307.
 WALPOLE (Sir Robert), Earl of Orford, XXI. 691—his plan for lessening the national debt, V. 456—his excise scheme, 457; XXI. 42—his resignation, V. 458—his quarrel with Pulteney, XVIII. 684.
 — (HORACE), XXI. 692—Walpoliana, or literary conversations of, II. 739—patronised pointed architecture, III. 457—his *Mysterious Mother*, VIII. 166—romances of, XIX. 276—anecdote of Fielding related by, IX. 541, n. 1—on Hume in Paris, XII. 4.
 Walrus, XIV. 173—its skull and teeth, XVI. 463—tusks of, as ivory, XII. 663—in Greenland, XI. 43.
 WALSALL, in Stafford, XXI. 694; XX. 531—railway connected with, ib.
 WALSH (William), critic, XXI. 694.
 — (Mr), on the electricity of the torpedo, I. 738; VIII. 572; and gymnotus electricus, 575.
 WALSINGHAM (Sir Francis), XXI. 694; VIII. 636.
 — abbey, in Norfolk, XVI. 291.
 WALTER (John), XXI. 694—establishment of *The Times* by, XVI. 187.
 — (T. G.), of Berlin, on parts of structure without nerves, II. 813.
 WALTHAM ABBEY, town in Essex, XXI. 695.
 — Cross, XI. 360.
 — in Massachusetts, XIV. 341.
 Walther, astronomer, III. 796.
 WALTON (Brian), XXI. 695—his Polyglot Bible, IV. 698, 707; XVIII. 266.
 — (ISAAC), XXI. 695—on angling, III. 149 n., 152, 156 n., 161—editions of his *Complete Angler*, 163—on George Herbert, XI. 343—on Hooker, 621—his *Life of Sir H. Wotton*, XXI. 933.
 — naval officer, XX. 241, and n.
 — (John), his papers on insects, IX. 22.
 Walworth (Sir William), XIII. 110; VIII. 684.
 Wamba, king of the Goths, XX. 460.
 Wanderou, species of monkey, XIV. 141.
 Wandle, river, XX. 837.
 WANDSWORTH, in Surrey, XXI. 696—the orders of, XVIII. 488.
 Wangenheim (General), anecdote of Bernadotte and, VII. 569.
 Wanlockhead, in Dumfriesshire, lead mines of, VIII. 238—yield of lead in 1854, XV. 246—apparatus for condensing lead fumes at, XIII. 300.
 WANTAGE, in Berks, XXI. 696.
 Wants, in coal beds, VII. 116.
 Wapenshawings, XV. 8.
 Wapentakes, II. 481.
 Wapiti, in zoology, XIV. 207.
 WAR, XXI. 697—the principal cause of mankind degenerating into a savage state, I. 452—use of balloons in, II. 180, 184—among the North American Indians, 682—manner in which it enhances prices, III. 199—history of, 619—effects of the invention of gunpowder on, VI. 624—chivalry impaired by the civil wars in France and England, ib.—colonies a grand source of, VII. 146—power of governments strengthened by, 147—effects of war expenditure on the price of commodities and income of individuals, 190—bad effects of, 194—pernicious to trade, 198, 200—Machiavelli on the art of, XIII. 779—rights of nations in time of, 285—what is requisite to make a war just? ib.—what are just modes of carrying it on? ib.—articles contraband of, XVI. 156—articles of war, 107—appointment of a secretary of state for, XVII. 298—establishments for, in France, X. 270—regarded as anti-Christian by Quakers, XVIII. 717—seven years' war, XI. 578; XVIII. 652; XIX. 482—wars of ants, III. 265; of bees, IV. 582. See Army, Artillery, Tactics, Thirty Years' War, Fortification, &c.
 War-horse, XI. 656.

WAR—WAR

- War-taxes, X. 338.
 WARASDIN, in Austria, XXI. 728.
 Warbeck (Perkin), VIII. 696—his proceedings in Ireland, XII. 474—his visit to Scotland, XIX. 764.
 Warblers, birds, XVI. 756.
 Warbles, in the horse, XXI. 579.
 WARBURTON (E. B. George), XXI. 728.
 — (WILLIAM), XXI. 728—his opinion of Malebranche's talents, I. 80, n. 2—his hostility to Dr Clarke, 146, n. 1—on the Jewish ignorance of a future state, VI. 637—on Aeneas' descent into hell, X. 611—Gibbon's attack on, ib.—his connection with Hurd, XII. 49—his friendship with Pope, XVIII. 334—on mysteries, XV. 754—on ancient punctuation, XVIII. 686—his work on the Doctrine of Grace, XXI. 835.
 WARD (Seth), XXI. 731—astronomical system of, I. 611.
 — (Commander), his life-belts, XIII. 440.
 — (Mr), on the policy of Spain to her American possessions, II. 701.
 Warde (Mr), his hounds, XI. 767.
 WARDEIN, XXI. 731. See Grosswardein.
 Warden (Joseph), his work on bees, IX. 3.
 — of the Cinque ports, VI. 728.
 Warden cases for plants, V. 107.
 WARDLAW (Ralph, D.D.), XXI. 731—on the utilitarian view of moral rectitude, XV. 554—on theology, XXI. 194 *et seq.*
 — (Henry), bishop of St Andrews, XXI. 472.
 Wardle (Col.), his charge against the Duke of York, V. 605.
 WARE, in Hertford, XXI. 731.
 Waree, island, IV. 653.
 WAREHAM, in Dorset, XXI. 731.
 Warehousing system, XXI. 41.
 Wargentia (M.), astronomical labours of, III. 806—on the rate of mortality in Sweden, XV. 603.
 WAREN, town in Germany, XXI. 731.
 WARENDORF, in Westphalia, XXI. 732.
 Warham (Archbishop), VII. 481.
 Waring (Edward), I. 712, and n. 2.
 Warington (Mr), on aquaria, XV. 328.
 — (Mr), on green and black tea, XXI. 86.
 WARKWORTH, in Northumberland, XXI. 732.
 Warlike (Mr), on the chemical influence of electricity, VIII. 594.
 WARMING, XXI. 732—of buildings, XIX. 613—of hot-houses, XI. 720. See Stove.
 WARMINSTER, in Wilts, XXI. 732.
 Warnery, on the qualifications of military officers, XXI. 699—on Caesar's invasion of Britain, 700—on war, 703.
 Warows of South America, IX. 349.
 WARP, XXI. 732, 780, 783—cotton, VII. 448—and weft, in lace-making, XIII. 143—machine, 144. See Weaving.
 Warping and warping mill, in weaving, XXI. 783.
 —, fertilization of land by, II. 363—advantages of, XII. 619—as practised on the Humber, II. 364.
 Warrant officers of the navy, XVI. 102—warrants for opening letters in the post-office, XVIII. 412.
 WARRANTY, in law, XXI. 732.
 Warren (Sir T. Borlase), V. 617.
 — (Dr), on stammering, XX. 535.
 —, XX. 210, n.
 WARRINGTON, XXI. 732—railway bridges at, XII. 599.
 Warrior, steam-frigate, description of, XX. 665.
 WARSAW, XXI. 732—libraries in, XIII. 425—taken by Charles XII., XX. 853—grand duchy of, XVIII. 153.
 WARTA, or Wartha, river, XXI. 733; XIX. 516.
 Wartburg, castle of, VIII. 519—Luther at, XIII. 728.
 Wart-hog, dentition of, XVI. 468.
 Wartmann on the influence of electricity on plants, V. 170.
 WARTON (Joseph), XXI. 733—his charge

WAR—WAT

- of plagiarism against Dr Conyers Middleton, IV. 637.
 WARTON, (THOMAS), XXI. 734—on the scarcity and value of books in the middle ages, V. 11—on Rowley's poems, VI. 431—on Dunbar's poetry, VIII. 247—on English minstrels, XV. 252.
 Warts on the domestic animals, treatment of, XXI. 579.
 WARWICK, English town, XXI. 736.
 —, earl of, VIII. 690. See Dudley (Sir R.)
 — (Sir Philip), his notice of Cromwell, VII. 510.
 WARWICKSHIRE, XXI. 737—population and value of property, VIII. 754.
 WASH (The), XXI. 739.
 —, in distilling, VIII. 49.
 Washing establishments, in London, XIX. 603.
 WASHINGTON (George), XXI. 740; II. 129; XXI. 434 *et seq.*—his administration, 438—his British ancestors, XVI. 298—monument to, at Baltimore, IV. 405.
 —, territory in United States, XXI. 766.
 —, capital of United States, XXI. 766—captured by the British in 1814, V. 617—Library of Congress at, XIII. 430—Smithson's library at, ib.—meteorological observations at, XIV. 688.
 —, in Rhode Island, XIX. 147.
 Wash-leather, XIII. 310.
 Wasps, IX. 197—endeavour to bite and sting after decapitation, 177—hostile to the bee, IV. 588—instincts of, XII. 391—their sting poisonous, XIV. 440.
 Waste lands, cultivation of, II. 358.
 — book, in book-keeping, V. 28.
 WATCH, XXI. 768; VII. 27—regulation of, 28—repeating watches, 34—keyless, ib.—fusee of, 28—escapements, 32—electro-gilding of watch-cases, X. 626—Mr Atwood on balances, IV. 234—watch-making in Switzerland, XX. 890—Geneva, X. 449—Neuchâtel, XVI. 153—improvements in, XIII. 686.
 Watchman's clock, VII. 18.
 Water, compressibility of, I. 723; II. 101, 102; VI. 201; XII. 77—viscosity of, I. 887—maximum density of, 941—transmission of sound by, II. 99, 102—in the atmosphere, 376—absorbed by the roots of plants, 378—decomposition of in plants, 383—composition of, I. 929, 930; VI. 352; VIII. 594—chemical character of, VI. 458, 459—its great solvent power, 460—eruption of, from Mount Aetna, II. 196—scarce in Arabia, III. 344 *et seq.*—temperature of boiling water applied to the measurement of heights, IV. 467—water of crystallisation, VII. 545—as a remedy in fever and other diseases, 594—hard and soft water, VI. 460, 473—modes of cooling it, VII. 100 *et seq.*—congelation of, 103; XI. 269—artificial congelation, 271, 275; VII. 104—loses its air in the act of freezing, 103—Dr Wollaston's experiments and electrical apparatus for the decomposition of, VIII. 595—embankments against, 643—alimentary qualities of, 20; IX. 765—difficulty of breathing caused by the pressure of, VIII. 60—in gardening, XI. 698—heating hot-houses, &c., with, 721—mechanical powers and properties of, XII. 69—pressure and equilibrium of, 78—specific gravity of, 84—water in motion, 103—jets of, 130—machines for raising, 174—discharge of, 112, 115—its flow over weirs, &c., 121—its motion in pipes, 131; XVIII. 61; in canals, XII. 136—water-bellows, 183—traffic in water in Lombardy, XIII. 648—London water companies, 664; supply of to London, ib., 665—importance of supply of potable water, XIV. 443—a non-conductor, 643—evaporation and condensation of, 646; IX. 406—of the Mediterranean, XIV. 469—in mineralogy, XV. 125—composition of sea-water, XVII. 572; XX. 649; specific gravity of, XVII.

WAT—WAT

- 572—colour of, 574—in landscape gardening, 772—ebullition of in air-pump, XVIII. 40—air combined with, 50—how obstructed in moving along canals, 62—circles formed by dropping a pebble in, 71—why rendered scarce by frost, 72—its importance for sanitary purposes, XIX. 609, 616—distilled water for the navy, XX. 24—decomposed by galvanism, XXI. 628—ordeal by, XVI. 701. See Aqueduct, Deluge, Evaporation, Filter, Fluids, Hydrodynamics, Irrigation, Mineral Waters, Pipes, Pump, Sea, River, Steam, Waterworks, Wave, &c.
 Water in the brain, XXI. 575. See Hydrocephalus.
 Water-barometer, IV. 452, and n.
 Water-battery, XXI. 619.
 Water-bean, order of plants, V. 181.
 Water-chestnut, V. 192.
 Water-clock, VI. 763; VII. 564—Amon-ton on the, II. 724.
 Water-colours, drawing in, VIII. 174.
 Water-column machines, XII. 173.
 Water-cranes, on railways, XVIII. 777.
 Water-cure. See Hydropathists, Preissnitz.
 Waterfalls, in Europe, XVII. 605—in Norway, XVI. 321—of the Rhine, XIX. 144; the Zambesi, XVII. 608; Missouri, 604—in California, ib.—in Cardigan-shire, VI. 233—fall of Niagara, 135; XVI. 241—of Tequendama, III. 131; IV. 808.
 WATERFORD, Irish county, XXI. 768—XII. 508, 515, 517.
 —, city, XXI. 771—besieged by Cromwell, XII. 484.
 Water-gas, X. 427; XIX. 616.
 Water-glass, surface of stones protected by, XX. 735.
 Water-hens, XVI. 806, 807—shooting of, XX. 218.
 Waterhouse (G. R.), his contributions to entomology, IX. 21—his enumeration of ruminants, XVII. 632.
 Watering places. See Mineral Springs.
 WATERLAND (Daniel, D.D.), XXI. 771—on the Athanasian creed, IV. 158—on the abuse of demonstrations, XIV. 602.
 Waterlandians, XIV. 501.
 Water-lily, order of plants, V. 181.
 Water-lines, in ship-building, XX. 184, 163.
 Waterloo, battle of, V. 620; X. 172; XXI. 828—illustrative plan of, 717—Blucher at, IV. 798—conduct of the British infantry at, III. 667.
 Waterloo-bridge, London, V. 363; XIII. 676; XIX. 12—opening of, XXI. 829.
 Water-meadows, XII. 612—management of, 616—advantages of, 619—Cato and Columella on, 621. See Irrigation.
 Water-ouzel, bird, XVI. 753.
 Water-pepper, order of plants, V. 184.
 Water-pitcher, order of plants, V. 182.
 Water-plantain, order of plants, V. 214.
 Water-pot shells, XV. 350.
 Water-rail, bird, XVI. 807.
 Water-retting of flax and hemp, IX. 656; XI. 312.
 Water-shield, order of plants, V. 181.
 WATERSPOUT, XXI. 771; XIV. 684—electrical origin of, VIII. 586—in Orkney, XVI. 721.
 Waterton (Mr), on the sloth, XIV. 190—on the armadillo, 191—large serpent killed by, XIX. 61, n. 3—on the alligator, 27—on birds, XVI. 732, 750, 759.
 Water-vole, teeth of, XVI. 454.
 Water-wheels, XII. 163—defects of common kinds, I. 889—principle of greatest advantage in, 890.
 WATERWORKS, XXI. 772—Crawley, VIII. 405—connected with Glasgow, X. 649—Greenock, XI. 47—London, XIII. 664—of the crystal-palace, Sydenham, XX. 892. See Aqueduct, Hydrodynamics, Pipes.
 Water-wort, order of plants, V. 213.
 WATFORD, town in Herts, XXI. 772.
 Watkins (Francis), on electro-magnetism,

WAT—WAV

- XIV. 75, 76—his rotatory magnet, XXI. 639—his revolving battery, 640—his revolving helices, ib.—his thermo-electric pile, 653.
 Watling Street, IV. 666; XI. 350.
 WATSON (Richard), bishop, XXI. 772.
 — (George), his Hospital, VIII. 402.
 — (John), his Hospital, VIII. 402.
 — (Dr Joseph), on the education of the deaf and dumb, VII. 676, 678, 682 *et seq.*
 — (Sir William), on electricity, VIII. 526, 543.
 — (H. C.), on the distribution of British plants, V. 230; XIX. 795.
 — (Dr Forbes), on the raw material of textile manufactures, XXI. 907.
 WATT (James), XXI. 773; X. 648; I. 865—first to study the properties of steam as a philosopher and practical mechanist, 866—estimate of his genius, ib.—his birth and early history, ib.—his connection with Dr Black, 867; IV. 739—his obligations to Dr Black, I. 867, and n. 5—his position in Glasgow college, 867—his first experiments on steam, ib.—his principle of separate condensation, 868; XX. 576—personal character, I. 869, 870—close of his life, 870—his intimacy with, and character he gives of Prof. Robison, 871, 873—Arago's eulogy of, 911—his behaviour in reference to Cavendish as the discoverer of the composition of water, 929, 930—introduced into Britain the use of chlorine in bleaching, IV. 758, 759, 760—his connection with Mr Boulton, V. 246—on the application of the steam-engine to cotton spinning, VII. 446—on the effects of heat in converting water into steam, XI. 271—on the Cornish mines, XV. 227, n.—his experiments on the elastic force of steam, XX. 557—his history of his improvements on the steam-engine, 576, 577—illustrations and details of those improvements, 577—his pumping-engine of 1768, ib.—his engine of revolution, 580—his description of the Albion Mill engines, ib.—his expansive engine, 579—his steam-boiler, 587—his invention to secure parallel motion, 592, 593; XIV. 402—his governor, XX. 595—his crank for steam-engines, 581—his mode of estimating horse-power, 602—his patent for preventing smoke in furnaces, 353, 355—application of his steam-engine to navigation, 637—his use of the term *duty*, 612—Watt's approximate, XIV. 402.
 — (ROBERT), XXI. 778.
 — (R.), executed for high treason, V. 555.
 — (Dr Robert), on the mortality of children, XV. 612.
 — (Gregory), on the structure of basalt, XV. 165.
 Watt's retting process, II. 333.
 Wattle bird, XVI. 765.
 — bark, in tanning, XIII. 306.
 WATTS (Dr Isaac), XXI. 778—his hymns, XII. 189.
 — (Thomas), on the English Mercury of 1588, XVI. 180.
 Wauchope (General), VIII. 492.
 Waugh (Dhoondiah), Wellington's operations against, XXI. 818.
 WAVRE, town in Belgium, XXI. 779.
 Waves, XVII. 580—experiments on, I. 888, 889—force of, XI. 216—relation between their height and depth of water, 218—height of at Lybster, in Caithness-shire, 224—their impulse against a pier, 220—reduction in height after entering harbour, 222—oscillation of waves, XII. 71, 72, 74—individuals by whom the subject has been investigated, 74, 75, 76—undulation of, 162—tidal wave of estuaries, XVI. 64; laws of its propagation, ib.—tide-wave, XVII. 580—breadth and velocity of waves, 582—of air and water, in some respects similar, XVIII. 71—force of, on a ship in motion, XX. 180

WAV—WED

wind-waves, XVII. 581—wave-surface in optics, XVI. 548, n. 1.
 Waves (atmospheric), XIV. 650. See Atmosphere.
 Wavellite, mineral, XV. 74—Sir H. Davy on, VII. 668.
 Waveney, river, XVI. 289.
 Wax, XXI. 779; II. 381; IV. 572—of the ear, III. 46; XVII. 679—bleaching of, IV. 771—in plants, V. 73—produced by insects, IX. 173—gilding-wax, X. 626—use of, in modelling and casting, XIX. 844—wax-candles, VI. 171—specific gravity of, XII. 88—in painting, VIII. 654—sealing-wax, XXI. 779.
 Wax myrtle, V. 207.
 Wax-paper process, in photography, XVII. 549.
 Wax-wing, bird, XVI. 750.
 Way, permanent, in railways, XVIII. 753—in the Great Western, 755.
 Way-leaves, XVIII. 752.
 Way-faring tree, XVII. 764.
 Way (Prof.), on soils, II. 396.
 Wazirabad, town in the Punjab, XVIII. 621.
 Wealden rocks, XV. 209—in Surrey, XX. 836—Sussex, 839—weald clay, XV. 209; in Kent, XIII. 64—flora of, V. 237.
 Weales' Engineer's Pocket-book, XX. 779, 780.
 Wealth, defined, XVIII. 210—production of, 224—distribution of, 239—consumption of, 256—an evidence of superior good conduct, XXI. 41.
 Weaning of lambs, II. 353.
 Weapon-shavings, XIX. 758. See Wapen-shavings.
 Weapons, stone, III. 421.
 Wear, river, dredging of, XVI. 69—physical characteristics of, 88.
 Weardale, lead mines of, VIII. 266.
 Wearmouth, iron bridge at, V. 358, 360; XII. 577, 578.
 Weasel, quadruped, XIV. 157.
 Weather. See Atmosphere, Climate, Meteorology, Rain, Wind, Temperature, &c.
 Weatherby's Stud-book, XI. 645.
 Weather-glass, IV. 453; XVIII. 26; XXI. 221. See Barometer.
 Weather-helm, XX. 160.
 Weaver, river in Cheshire, VI. 529; XIX. 582—salt carried on, 585.
 Weavers, health of, XIV. 442—foreign weavers in Norwich, XXI. 780—exiled by Charles I. ib.—French weavers in Britain, ib.—their petition in 1713, 781—attacks of, on the East India trade, ib.
 WEAVING, XXI. 780—of tapestry, 20—of wool, 923—by power, VII. 450. See Cotton manufacture, Design, Silk manufacture, Woollen manufacture.
 Webb (Captain) on the Himalaya mountains, XI. 450—his expedition to the sources of the Ganges, X. 400.
 —(Barker), on the botany of the Cape Verde islands, XXI. 544.
 WEBER (Carl Maria Von), XXI. 794.
 —(E. Heinrich and Wilhelm), on waves, I. 888; XII. 75.
 —(Prof.), of Göttingen, on electric telegraphs, XXI. 96, 97.
 —(F.), his works on insects, IX. 8.
 —(M.), on romance, XIX. 265.
 Web-footed birds, XVI. 808. See Palmipedes.
 Webs, of spiders, III. 374.
 WEBSTER (Daniel), American statesman, XXI. 795, 441.
 —(JOHN), dramatist, XXI. 796.
 —(NOAH), XXI. 796.
 Weddle (Thomas), his mathematical rules, XX. 142, 143.
 Wedemeyer on the capillaries, II. 799.
 WEDGE, in mechanics, XXI. 796.
 Wedging, in carpentry, V. 747—fox-tail wedging, VI. 263.
 WEDGWOOD (Joseph), XXI. 796; XVIII. 433; XX. 530—his pyrometer, I. 763; XVIII. 703—importance of his inventions in pottery, V. 508.

WED—WEL

Wedgwood (Thomas), his photographic experiments, XVII. 544; I. 922.
 WEDNESBURY, in Stafford, XXI. 797—manufactures of, XX. 530.
 WEDNESDAY, XXI. 797—origin of the name, I. 458, n. 2; VI. 75—Ash-Wednesday, XXI. 797.
 Weed, disease in horses, XXI. 574.
 WEEDON-BECK, village in Northamptonshire, XXI. 797.
 Weeds, removal of, from cultivated land, II. 289.
 Week, VI. 75; XIX. 560.
 Weevil, insect, IX. 141.
 —victualling yard at, VIII. 84.
 Wegscheider, on theology, XXI. 194 et seq.
 Weguelin (Mr), his evidence on deposits in the Bank of England, XV. 473.
 Wehlite, mineral, XV. 90.
 WEIGHING MACHINE, XXI. 797; II. 284; XIV. 415. See Balance.
 Weight, of liquids, XIV. 417—of the human body, III. 2; of individual organs, 3—gross and nett, 595—of air, XVIII. 23—effect of air on, 47. See Gravity, Weights.
 —, in phrenology, XVII. 563.
 WEIGHTON, market, in Yorkshire, XXI. 798.
 WEIGHTS AND MEASURES, XXI. 798. Belgian, IV. 626—modern Egyptian, VIII. 517—common standard of, proposed by the French Convention, I. 836; IX. 551; X. 83—tables of, III. 584; XXI. 805, 806, 808—assay weights, III. 767—Beccaria's plan of, IV. 559—present French, X. 283—Greek, XI. 15—of Chile, VI. 552—Dr Cumberland on Jewish weights, VII. 580.
 Weiher, his attack on the belief in witchcraft and sorcery, XIV. 422.
 WEIMAR, XXI. 814—library at, X. 592.
 Weirs, fall of water over, XII. 121—in rivers, XIX. 215; IX. 619—waste weirs in canals, XVI. 56.
 Weishaupt (Adam), XII. 363.
 WEISSE (Christian Felix), XXI. 814.
 —(Prof.), on animalcules, III. 209.
 —'s catalogue of stars, IV. 95.
 —account of Dr Wolfart's magnetic practice, XX. 444.
 Weiss (Prof.), his arrangement of minerals, XV. 67—his speculum, XX. 811, n.
 Weissemburg, a blind man, IV. 780.
 WEISSENBURG, in Bavaria, XXI. 814.
 WEISSENFELS, town in Saxony, XXI. 814.
 Weissite, mineral, XV. 89.
 WEISSKIRCHEN, town in Moravia, XXI. 814.
 —, Austrian town, XXI. 814.
 Weibrecht, his experiments on capillary attraction, XII. 91.
 Welbeck, Duke of Portland's plantations at, XXI. 271.
 Weld, dyestuff, VIII. 295—dyeing wool with, 297; silk, 298; cotton and linen, 299.
 Welland canal, VI. 186, 154.
 —, English river, XIII. 491.
 Welles (Sir Robert), VIII. 691.
 WELLESLEY (Richard Colley), Marquis, XXI. 814; V. 606, 638—his administration in India, XI. 501, 503; his foreign policy, ib.—on European agency in India, 523—on the newspaper censorship in India, XVI. 203—his last interview with Pitt, XVII. 743.
 Wellesly (Captain G. G.), his north-west voyage, XVIII. 171, n.
 WELLINGBOROUGH, in Northamptonshire, XXI. 815.
 WELLINGTON (Arthur Wellesley), Duke of, XXI. 815—his improvements in the army, III. 666—his order of battle, IV. 512—his Spanish campaigns and tactics, V. 604, 606, 609 et seq.—his conferences with Canning about the formation of a ministry, 648—his opposition to Canning's corn bill, 650—his administration, ib.; XVII. 363—his conduct relative to Catholic emancipation, V. 652, 654, 656; XII. 501—his declaration

WEL—WER

against Parliamentary reform, V. 659; XI. 63—his resignation as premier, V. 660—member of the Congress of Vienna, 637—expedition to Portugal, 608; X. 150; XVIII. 387, 388—death of, V. 672—his account of the battle of Waterloo, X. 173—his estate in Granada, 794—his military convention with Davoust, 174—his recommendation of Fouché, 175—his operations in India, XI. 504 et seq.—on Sir John Moore's campaign in Spain, XV. 529—his connection with Sir Robert Peel, XVII. 363 et seq.—plan of his defence of Portugal, XXI. 706—Torres Vedras, 707 (see that article)—his combinations at Salamanca and Waterloo, 712, 718—his friendship with Sir John Malcolm, XIX. 108.
 Wellington (Duke of), screw steam-ship, 665—comparative size of, 641.
 WELLINGTON, town in Shropshire, XXI. 831.
 —, in Somersetshire, XXI. 831.
 —(Fort), IV. 300.
 —, town and province in New Zealand, XVI. 234.
 Wellingtonia gigantea, tree, XVII. 626, 627.
 Wellmann (Alexr.), on the herring market of Stettin, IX. 640.
 WELLS, town in Somersetshire, XXI. 831.
 —, in Norfolk, XXI. 831.
 —(Dr), on dew, VII. 770; XI. 265; XIV. 653; I. 954.
 Wells cathedral, XIX. 865—arches of the nave, XX. 733.
 Well-sinkers, diseases of, XIV. 442.
 Wellsted (Lieut.), on Arabia, III. 360.
 Wellwood (Sir H. Moncreiff), on Edward's work on the Freedom of the Will, VIII. 416.
 WELS, town in Austria, XXI. 832.
 Welsh (Dr), his protest, and withdrawal from Assembly of Established Church of Scotland, XVIII. 495.
 —(Mr), his balloon ascents, II. 184, n.; XIV. 640, 642, 643.
 —(Mr), on the thermometer, XXI. 223.
 WELSHPOOL, town in N. Wales, XXI. 832; XV. 518.
 Welter (M.), on bleaching, IV. 760, 759—his indigo test in bleaching, 763.
 WEM, town in Shropshire, XXI. 832.
 Wemyss, glass first manufactured at, in Scotland, X. 659.
 Wenck (Dr), on the Theodosian code, VI. 745.
 Wendish language, XIII. 214.
 WENDOVER, town in Bucks, XXI. 832.
 WENER, Swedish lake, XXI. 832; XX. 861.
 Wenham (Mr), his method of illuminating microscopic objects, XIV. 798—on microscopic photography, 801.
 WENLOCK, town in Shropshire, XXI. 832—rocks of, XV. 197, 198.
 Wensleydale (Baron), his peerage, XI. 336, n.
 —, in Yorkshire, XXI. 957.
 Wentle-traps, shells, XV. 383.
 WENTWORTH (Thomas), Earl of Strafford, XXI. 832; V. 393—impeachment and execution of, 396, 397; XVIII. 699—his government of Ireland, XII. 480, 481.
 Wenzel on chemical combination, I. 937.
 Wenzels on cerebral matter, II. 818.
 Wepfer's anatomical researches, II. 762.
 Werben, battle of, XX. 849.
 WERDAU, in Saxony, XXI. 833.
 WERDEN, in Prussia, XXI. 833.
 WERGELAND (H. Arnold), Norwegian poet, XXI. 834.
 Werk, siege of, V. 714.
 Werne (Mr), on the White Nile, XVI. 270.
 WERNER (A. Gottlob), XXI. 834—on minerals in veins, XV. 194—on mineral veins, 220—on the colours of minerals, 59—his doctrines advocated, in Scotland, by Prof. Jameson, XII. 684; and Dr John Murray, ib.
 —(F. L. ZACHARIAS), dramatist, XXI. 834.

WER—WES

Werner (John), mathematician, I. 552; III. 796; X. 505.
 —(M.), his ornithological atlas, XVI. 732.
 —(Jean), of Nuremberg, on the longitude, XIII. 686.
 Wernerian Society of Edinburgh, XII. 685.
 Wernerite, mineral, XV. 72.
 WERNIGERODE, XXI. 834.
 Werterling (C. U.), his work on insects, IX. 15.
 Wertheim on the sounds produced by electric currents, XXI. 631.
 WESEL, in Prussia, XXI. 834.
 WESER, German river, XXI. 834; X. 580; XI. 211; XVII. 647; XVIII. 662.
 WESLEY (John), XXI. 835; XIV. 691—his hymns, XII. 189—his doctrines, XIV. 692.
 Wesleyan Methodists, XIV. 691—their places of worship in Scotland, XIX. 801.
 Wesling (John), the first delineator of the lacteals, II. 761.
 Wesmael (C.), his works on insects, IX. 20.
 Wessel (John Herman), Danish author, XIX. 693.
 Wessex, VIII. 657.
 WEST (Benjamin), painter, XXI. 835—character of his pictures, III. 717; XVII. 79, 80, 84.
 —(GILBERT), XXI. 836.
 West's melon and cucumber pit, XI. 734.
 WESTBURY, in Wiltshire, XXI. 836.
 WESTERHAM, in Kent, XXI. 837.
 West India Docks, London, VIII. 75; XIII. 661.
 —Company (Dutch), XI. 584; their colony in New York, XVI. 217.
 WEST INDIES, XXI. 837; II. 708—attempts to transplant the bread-fruit to, V. 301—British colonies in, VII. 147—exports from Britain to, 190—Danish colonies in, 745—blood-hound of, XI. 764—Edward's History of, VIII. 414—assurance offices in, XII. 413—missions among the negroes of, XV. 271—condition of, since abolition of slavery, XX. 327—sugar, 795—sugar-cane, 792, n.—weights and measures, XXI. 814—map of, XXI. Plate. See the names of the different islands.
 Western (the Great), steam-ship, XX. 639—comparative size of, 641.
 —(the Great), railway, XVIII. 753, 754, 755, 758, 761, 794—locomotives on, 780—costs of obtaining the original acts for, 796—station on, at Swindon, XX. 881; XXI. 879.
 Westgarth (Mr), his reports on the colony of Victoria, IV. 288, 291—on the yield of gold in, 289, 290—on the commerce of, 292—on South Australia, 295.
 WESTMACOTT (Sir Richard), sculptor, XXI. 837—character of his sculpture, XIX. 867 et seq.—on Sir Thos. Lawrence, XIII. 297.
 WESTMEATH, Irish county, XXI. 838; XII. 508, 515, 517.
 WESTMINSTER, XXI. 841—Domesday Book kept at, VIII. 98—Assembly of divines at, III. 775; XVIII. 493—bridge, XIII. 676; foundations of, XX. 723, 724.
 —Abbey, III. 454, 489; XIII. 671—foundation of, 659—library of, 394—arches of the choir, XX. 733.
 —Hall, XIII. 669—architecture of, III. 483, 517—timber of its roof, VIII. 213—roof of, VII. 324, n. 2.
 —New Palace, XIII. 668—iron roofs of, XIX. 396—great clock at, VII. 15, 22, 23, 24—building stone used for, XX. 712; IV. 839.
 —School, XIII. 667.
 WESTMORELAND, or Westmoreland, XXI. 841—population and value of property, VIII. 754.
 Weston (Sir Richard) on agriculture, II. 257.
 WESTON-SUPER-MARE, XXI. 844.
 WESTPHALIA, XXI. 844—population

WES—WHE

XVIII. 663—religious denominations in, 664—agriculture, 666, 667, 668—lead mines of, 668—marble, 669—paper factories, *ib.*—hams, 666—proportion of insane in, XIV. 536—treaty of, IV. 303; VI. 661; X. 579; XI. 575; XVIII. 650.
 WESTPORT, Irish town, XXI. 844.
 Westrey and Papa Westrey, Orkney islands, XVI. 718, 719.
 Westwood (W. O.), his entomological works, IX. 20.
 Wethered's system of mixed steam, XX. 650.
 WETSTEIN (John James), XXI. 844—his edition of the New Testament, IV. 698.
 Wette (De), on the Psalms, XVIII. 678—on theology, XXI. 181 *et seq.*
 WETTER, Swedish lake, XXI. 845; XX. 861.
 WEXFORD, Irish county, XXI. 845; XII. 508, 515, 517.
 —, town, XXI. 848.
 Wey, river, XX. 836—Wey and Arun junction canal, 837.
 WEYMOUTH, in Dorsetshire, XXI. 848; VIII. 111.
 —, Pine, tree, XVII. 757, 760.
 Whale, XIV. 231—white, 228—bottlenosed, 231—spermaceti, *ib.*—Greenland, 233; XI. 43—ambergris found in, II. 657—eye of, III. 95—upper jaw and baleen plates of, XVI. 442—lower jaw of a fetal whale, 443—whales of the southern and northern ocean specifically distinct, XVII. 635—distribution of, *ib.*—rare in the Baltic, IV. 404—on the Lapland coast, XIII. 236—skeleton of, found near Stirling, XX. 703—fossil whales, XVII. 165, 166.
 Whalebone, III. 107; XIV. 233; XVI. 442.
 Whale-fishery, IX. 650—of Brazil, V. 299; England, VIII. 728; France, X. 265; Holland, XI. 583; Hull, 795; Peterhead, XVII. 484.
 Whale-lice, VII. 542.
 Whale-oil, XVI. 493.
 Wharfe, and Warfedale, XXI. 957.
 WHARTON (Philip, Duke of), XXI. 849—Dr. Edward Young's connection with, 960.
 — (Thomas), on the glands, II. 762.
 —, salt-mine, XIX. 583.
 Wharves, on tidal rivers, XVI. 79.
 Whately (Archbishop), his Dissertation on the rise, progress, and corruptions of Christianity, I. 447—on fallacies, IX. 476—on belief in the Christian miracles by Jews and pagans, XV. 263, *n.* 2—on rhetoric, XIX. 105, 121, 123.
 WHEAT, XXI. 850—varieties of, II. 306—red-wheat, *ib.*—steep or bath for, *ib.*—spring-wheat, 307—average yield of, 310—chemical properties of, 379, 384, 386, 388, 417, 419—wheat flour, 381; IV. 379—quantity imported from the Black Sea, in 1852, 745—the spikelet of a wheat plant, V. 115—mummy wheat, 164—culture of, in Upper Canada, VI. 146, 147—its northern limit in Europe, IX. 386—as food, 758—straw, for plaiting, XI. 243—mean time of wheat harvest in different latitudes, XVII. 625—origin and distribution of, 630—advantage of dibbling, XVIII. 338—exports of, from Odessa, XVI. 406—Dantzic wheat, VII. 652—gluten from, X. 684—culture of, in Lombardy, XIII. 655—in Chile, VI. 549. See Agriculture, under the different kingdoms and counties. Corn-laws.
 Wheat-ear, bird, XVI. 755.
 Wheatstone (Prof.), his invention of the stereoscope, I. 925—his rheostats, 984; XXI. 625—on the velocity of electric conduction, I. 985; VIII. 543—his electric telegraph, I. 986—on the electric telegraph, XXI. 100, 101, 103—ink-marker in his telegraphs, 105—descriptive notice of his telegraphs, *ib.*—his automatic telegraph, 106—his step-by-step telegraph, 111, 112, 115—his type-

WHE—WHI

printing telegraph, 112—his stereoscopic principle explained, 134; XVII. 504—his reflecting stereoscope, XX. 685—on vision, XIV. 573—on the perception of solidity, 574—on the velocity of cannon balls, XI. 133, *n.*—his application of electricity to clocks, XXI. 644. See Stereoscope.
 WHEEL, XXI. 850; XIV. 391—skew-bevel wheels, 392—conical and disc, *ib.*—grooved, 393—spur-wheels, *ib.*—teeth of, *ib.*, 395—pin-wheels, 396—wheel and axle motion, 398—teeth of wheels for clocks and watches, VII. 36—water-wheels, XII. 163 *et seq.*—Egyptian water-wheels, VIII. 428; XII. 69—dash-wheel, IV. 764—Bramah's patent wheel, V. 274—fly-wheels, XIV. 412; IX. 748; XX. 589—in railway carriages, XVIII. 782—paddle-wheels, XX. 656—spinning-wheel, 508.
 Wheel-barometer, IV. 454; XXI. 934, *n.* 2.
 Wheel-carriages. See Carriage.
 Wheeler (Sir Hugh), XVI. 306.
 WHEELING, town in Virginia, XXI. 850.
 Wheel ploughs, II. 270.
 Wheezer, diseased horse, XXI. 571.
 Wheler (Mr) on electrical bells, VIII. 537.
 Whelks, shells, XV. 386, 387—egg capsules of, 389—fossil, XVII. 109.
 Wherry, IV. 800.
 Whewell (Prof.), his preface to Sir J. Mackintosh's Dissertation, I. 295—his History and Philosophy of the inductive sciences, 803; XVII. 527—on the tides, I. 818; XVII. 581—on philosophy as a branch of inductive science, 539—his cotidal lines, I. 818—his Bridgewater Treatise, V. 364—on the dependence of morality on law, XIII. 259—on the moral sense, XIV. 581.
 Whewellite, mineral, XV. 125.
 Whey, VI. 523—whey-cream, VII. 626—butter, *ib.*—its nutritive and curative qualities, XV. 11.
 Whicheot (Dr), Shaftesbury's admiration of his sermons, VII. 343.
 Whidby (Mr), his plan for the Plymouth breakwater, V. 307; superintendent of that work, 309.
 Whigs, origin of, V. 387—origin of the name, 428.
 Whimbrel, bird, XVI. 802.
 Whin. See Gorse.
 Whinchat, bird, XVI. 755.
 Whinstone. See Trap rocks.
 Whipper-in, XII. 47.
 Whipping, as a punishment, XIV. 445; XVIII. 575.
 Whip-snake, XIX. 57—in India, XI. 456.
 Whirlpool—the Maelstrom, XIII. 807.
 WHIRLWIND, XXI. 850; XIV. 684; VIII. 422—dust-whirlwinds, XIV. 685. See Cyclones.
 Whiskers, IV. 528.
 Whisky, IX. 760—manufacture of, VIII. 48—in Scotland, XIX. 805—Isla, XII. 629. See Spirits.
 WHIST, game of, XXI. 850.
 Whistler, diseased horse, XXI. 571.
 WHISTON (William), XXI. 850—on the Canticles, VI. 198—on Dr Samuel Clarke, 757, 758—on the Deluge, VII. 720.
 WHITAKER (John), XXI. 850—on the origin of church-bells, IV. 628—on Hannibal's passage of the Alps, VI. 293, *n.*—his history of Manchester, XIV. 250—on the history of King Arthur, III. 682—on bullæ, V. 761.
 Whitbread (Mr) on the expediency of peace with France in 1800, V. 571—his resolutions regarding the navy, 599.
 WHITBY, in Yorkshire, XXI. 852, 959.
 — (DANIEL), divine, XXI. 852—on original sin, 202.
 White, colour, varieties of, XV. 59—people with complexions of that colour, VII. 222.
 — (GILBERT), of Selburne, XXI. 852—on the harvest bug, III. 389—on the

WHI—WIG

parental affection of brutes, V. 703—on their sociality, 703, 704.
 WHITE (HENRY KIRKE), XXI. 853.
 — (JOSEPH BLANCO), XXI. 853.
 — (Richard), on the quadrature of the circle, XX. 522.
 — Surgeon, XX. 819.
 — (Adams), his works on insects, IX. 19.
 — (John), on the sound produced by the fish Pogonias, XII. 284.
 — Brethren, V. 317.
 — iron pyrites, XV. 115.
 — lead, XIII. 301; VI. 388—deleterious effects of, XIV. 434.
 — mountains, XX. 790.
 — fish, XII. 243.
 — River, XII. 374—valley of, 373.
 — Horse Hill, in Berkshire, IV. 666.
 White-bait, fish, XII. 236; IX. 764—of China, XII. 244.
 Whiteboys, Irish, XII. 492.
 WHITEFIELD (George), XXI. 853—his separation from Wesley, XIV. 693.
 Whitefriars' theatre, XXI. 167.
 Whitehall, in London, XIII. 671—Van Dyck's proposal to complete the decoration of, XXI. 522.
 WHITEHAVEN, in Cumberland, XXI. 855—coal mines of, VII. 577.
 Whitehorn (P.) on gunpowder, XI. 151.
 Whitehurst (Mr) on cohesion, VII. 60, 61—on the pendulum, XXI. 800.
 Whitehurst's machine, XII. 173.
 WHITELOCKE (Bulstrode), XXI. 855.
 — (General), failure of his attack on Buenos Ayres, V. 602; XVII. 781.
 WHITE SEA, XXI. 856; IX. 385; XIX. 516, 541.
 White-throat, bird, XVI. 756.
 WHITHORN, in Wigton, XXI. 856.
 Whiting, fish, XII. 269; IX. 764—fishery of, 648—whiting trout, XII. 269.
 Whitling, fish, XII. 240.
 Whitney (Mr), his tabular view of the metallic produce of the world, XV. 248; and of its value, 249.
 — (Mr Eli), his machine for cleansing cotton, VII. 447.
 WHITSTABLE, in Kent, XXI. 856.
 Whitsunday, why so called, IV. 424.
 Whittlesea-mere, XII. 48.
 Whittlewood Forest, XVI. 295.
 Whitworth (Lord), his conversation with Napoleon, V. 592, 593; X. 127—his account of Napoleon's behaviour at the Tuilleries, *ib.*; V. 594.
 — on mechanics, XIV. 415, 416.
 WHYDA, sea-port in Guinea, XXI. 856.
 Whytock (Richard), his improvement of carpet manufacture, VI. 272.
 WHYTT (Robert), physician, XXI. 856.
 WIBORG, in Finland, XXI. 857.
 Wichtyne, mineral, XV. 86.
 Wick, in Caithness, XXI. 857; VI. 62—herring curing at, IX. 640, 642—herring fishery, 635; XIX. 805.
 Wicker-work, IV. 487.
 Wick of lamps, XIII. 170, 171, 172.
 Wickham (Mr), V. 558.
 — (Mr), early notice of tea by, XXI. 88.
 — (Mr), on Hannibal's passage of the Alps, VI. 293 *n.*
 WICKLIFFE (John), XXI. 857. See Wycliffe.
 WICKLOW, Irish county, XXI. 857; XII. 508, 515, 517.
 — town, XXI. 859.
 Wide, meanings of the word, VIII. 11.
 WIDIN, Turkish city, XXI. 860; VII. 653.
 Wiegnowiecki (M. K.), king of Poland, XVIII. 144.
 Wiedmann (C. R. G.), his works on insects, IX. 13.
 WIELAND (C. Martin), XXI. 860, 718—poetry of, XVIII. 119—romances of, XIX. 290.
 WIESBADEN, XXI. 860—mineral waters of, XV. 39.
 Wife. See Husband and Wife.
 WIFFIN (J. Holme), XXI. 860.
 WIGAN, in Lancashire, XXI. 861.

WIG—WIL

Wigeon, bird, XVI. 819; IX. 762.
 WIGHT (ISLE OF), XXI. 861—needles off the, XVI. 128—lighthouse, *ib.*—its remarkable geological phenomena, XVII. 587.
 Wigtown, Scotch county, XXI. 863—agricultural statistics of, XIX. 796, 797, 708—population, 799.
 —, town in Wigtownshire, XXI. 864.
 Wilbeking (M.), on iron bridges, XII. 582.
 WILBERFORCE (William), XXI. 864—his opposition to the slave trade, V. 523, 533, 538, 540; XX. 321, 322.
 Willeke of Stockholm, his experiments on the distribution of heat, I. 761—on electricity, VIII. 565—his theory of magnetism, XIV. 91.
 Wildbad, springs at, XV. 37.
 WILDE (Thomas), Baron Truro, XXI. 865.
 Wild-fire, a disease of sheep, XXI. 578.
 Wild-fowl shooting, XX. 216.
 Wildman (Mr), his hives, IV. 586—his mode of managing bees, 587.
 WILKES (John), XXI. 866—prosecution of, V. 467—elected member for Middlesex, 470—Horne Tooke's intimacy with, XXI. 308.
 — (Benjamin), his works on insects, IX. 6.
 — (Lieut.), his alleged discovery of an antarctic continent, X. 473.
 WILKIE (Sir David), painter, XXI. 866; III. 717; XVII. 80, 85—his opinion of the scenery of Kerry, XIII. 73—on Velasquez and Murillo, XV. 694—engravings of his pictures by Raimbach, XVIII. 799.
 — (WILLIAM), poet, XXI. 867.
 WILKINS (John), XXI. 867; XX. 892—on a universal language and real character, I. 46; II. 611—his intimacy with John Ray, XVIII. 813.
 Wilkinson (Sir J. Gardner) on the use of beer among the ancient Egyptians, V. 318—on Egyptian carpet rugs, VI. 269—on a change of level in the Nile, VIII. 425—on the ancient Egyptians, 434—on the sacred animals of Egypt, 439—on the population of Egypt, 444—on the Egyptian dynasties, 450—on the sun-worshippers, 461—on hieroglyphics, XI. 409—his *Ancient Egyptians*, 431—on Egyptian fishes, XII. 252, 260—on the vocal Memnon, XIV. 492.
 Wilks, actor, XXI. 174.
 Will, XIV. 582—freedom of, 618—St Augustine and Descartes' assertion of its freedom, I. 267—Kant and Galiani's arguments for the same view, 196, 197—Aristotle on its freedom, III. 565—attributes of God in respect to, XXI. 191. See Free Will, Necessity, Volition.
 Will-o'-the-Wisp, or ignis fatuus, XII. 360; XIII. 457; X. 409.
 Willammez (E. B.), Admiral, on the battle of Trafalgar, XXI. 724.
 Willan (Dr Robert) on mortality in London, XV. 608.
 Wille, engraver, VIII. 809.
 Willemite, mineral, XV. 100.
 Willesden farm, XIV. 808.
 Willet, bird, XVI. 805.
 WILLIAM I. of England, XXI. 868—his visit to Edward the Confessor, VIII. 663—his conquest of England, 665—reign of, 666—death and character, 668—Aldred's influence over, II. 458—effect of his conquest on the English language, IX. 793, 794—his invasion of Scotland, XIX. 747—his navy, XVI. 93; XX. 120—forest made by, 209.
 — II. of England, Rufus, XXI. 868; VIII. 669—Scotland invaded by, XIX. 747—disputes between Malcolm and, 748—severity of his forest-laws, XX. 209.
 — III. of England, XI. 575—steps preliminary to his invasion of England, V. 436—his landing, 437—appointed king, 439—his favour to dissenters, *ib.*—his expedition to Ireland, 442; XII. 490; VIII. 218—altercations with

WIL—WIL

- his subjects, V. 446—death and character, *ib.*
- WILLIAM and MARY, proclaimed king and queen, V. 439—reign of, *ib.*—scheme for raising money by a Tontine, III. 230—recoinage of silver, VII. 78—act giving a bounty on the exportation of corn, 377—state of the coin, 378—navy, XX. 131; XVI. 93—household expenses of, XI. 773, 774.
- IV. king of Britain, XXI. 868—accession to the throne, V. 658—history of his reign, *ib.*—death, 665—act regarding the coinage in the reign of, VII. 76.
- the Lion, king of Scotland, XIX. 752.
- II. king of Holland, XI. 575.
- IV. landgrave of Hesse, a cultivator of astronomy, III. 798.
- OF MALMESBURY, XXI. 868. See Malmesbury.
- of Nassau, prince of Orange, XI. 563 *et seq.*
- OF NEWBURG, XXI. 868.
- OF WARHAM, XXI. 868.
- OF WAYNFLETE, XXI. 869.
- OF WYKEHAM, XXI. 869.
- (Fort), at Calcutta, VI. 69.
- WILLIAMS (John), missionary, XXI. 671; XVIII. 278, 279.
- (John), on the ascending thunder-bolt, VIII. 583.
- (Col.), employed in the ordnance survey, XXI. 331.
- (John), archbishop, founder of the first public library in London, XIII. 394.
- (Mr), on the population of China, VI. 587.
- (Mr), on manufacturing ice in the East Indies, XIV. 646.
- (C. Wye), his plan for preventing smoke in furnaces, XX. 256, 257—on the combustion of coal, 632.
- (Dr), on the annelides, XI. 291, 292 *et seq.*—his experiments on earth-worms, 301—on the organisation of chiton, XV. 380.
- (General), his defence of Kars, XIII. 53; XIX. 511; XXI. 375.
- (Roger), XIX. 146.
- (Messrs), their smoke-consuming furnaces, XI. 721.
- (Mr), on vitrified forts, IX. 790.
- Williamson (Dr), on the electrical eel, VIII. 575.
- (Rev. Mr), on the culture of the ranunculus, XI. 752.
- (Captain), on tiger-shooting, XX. 211.
- (Messrs), their vertical steam-engines, XX. 611.
- Williamson's patent for grates, XX. 354.
- Williamstown, in Victoria, XIV. 478.
- Willich (A. F. M.), quoted on Kant's philosophy, I. 191.
- Willing, XIX. 111, 112. See Volition.
- WILLIS (Thomas), XXI. 872—his improvements in anatomy, II. 762; and medical psychology, XIV. 460.
- on the brain as the seat of the mental faculties, XVII. 557, 578.
- (John), his shorthand alphabet, XX. 675.
- (Prof.), on clocks, VII. 16—his Principles of Mechanism, 36—on mechanics, XIV. 384, 385, 391 *et seq.*
- (Mr), his architectural nomenclature of the middle ages, XX. 737.
- Willoughby (Sir Hugh), his arctic voyage, XVIII. 164.
- (Lord), IV. 429.
- Willow, order of plants, V. 207.
- V. 115; XVII. 759, 764—used in basket-making, IV. 487—cultivation of, 488, 489—its leaves used as a dye-stuff, VIII. 297—bark used in tanning, XIII. 306—wood of, XXI. 278; its strength, XX. 757, 758; specific gravity, XII. 89.
- WILLS, or Testaments, XXI. 872.
- (General), V. 454.
- Willshire (General), his capture of Kelat, IV. 640; XIII. 58.

WIL—WIN

- Willstidae, zoophytes, XXI. 1001.
- WILLUGHBY (Francis), naturalist, XXI. 872—his connection with Ray, XVIII. 813—on fishes, XII. 205—on birds, XVI. 726, 814.
- Willying machine, XXI. 921.
- WILMINGTON, in Delaware, XXI. 873.
- WILMOT (John), Earl of Rochester, XXI. 873—converted by Bishop Burnet, V. 792—on Shadwell, XX. 68.
- (Sir J. E. E.), governor of Tasmania, XXI. 32.
- Willmot's code of naval signals, XX. 25.
- WILNA, XXI. 873. See Vilna.
- WILSON (Alexr.), ornithologist, XXI. 873—on American birds, XVI. 730, 742, 746, 752, 762, 805.
- (DANIEL), Bishop, XXI. 874.
- (FLORENCE), XXI. 874.
- (Dr GEORGE), XXI. 874—his life of Cavendish, I. 929 n. 1, 931—on colour-blindness, VII. 154—on the poisonous effects of lead fumes, XIII. 300—on the chemical changes of the human body, XIV. 617.
- (HORACE HAYMAN), XXI. 874.
- (JAMES), financier, XXI. 875.
- (JAMES), naturalist, XXI. 876—his work on the rod and gun, III. 165—his works on insects, IX. 20—his article Ichthyology, in the former edition of this work, XII. 331, n.
- (JOHN), Prof. of moral philosophy, Edinburgh, XXI. 876—his arrangement with Hogg in reference to the *Noctes*, XI. 558, n.—on the individuality of Homer, 602, n. 1—his literary connection with Lockhart, XIII. 548—Elleray, his residence in Westmoreland, XXI. 843—elected professor of moral philosophy, XX. 697—his poetry, XVIII. 127—novels, XIX. 282.
- (John), on charr-fishing, XII. 241.
- (Dr John), on the sinfulness of taking interest, XII. 429.
- (John), of Ainsworth, his improvements in the cotton manufacture, VII. 441.
- (Dr Patrick), on the sun, I. 841—on hoar-frost, VII. 769.
- (Mr), on ship-building, XX. 134, 161.
- (Dr), on Gennesareth, XVII. 186—on the animals of Palestine, 192.
- (Thomas), on insurance, XII. 395.
- (Thomas), on iron bridges, XII. 578, 579.
- (RICHARD), English painter, XXI. 878, 388, 389; III. 712; XVII. 79.
- (G. F.), on the uses of glycerine, X. 685.
- (Christopher), his life-boat, XIII. 445.
- (James), execution of, X. 647.
- (Benjamin), on electricity, VIII. 529.
- (Captain), his visit to the Marquesas islands, XVIII. 281.
- (Dr), on the solar spots, IV. 29.
- (George), Sir James Macintosh's character of, VIII. 241; I. 393, n.
- WILTON, town in Wiltshire, XXI. 878—carpets, VI. 272.
- WILTSHIRE, or Wiltonshire, XXI. 879—population and value of property, VIII. 754—Stonehenge (see that article).
- WIMBORNE MINSTER, town in Dorsetshire, XXI. 879.
- Wimpfen, deposit of salt at, XIX. 582.
- Winburgh cutting, Edinburgh and Glasgow Railway, XVIII. 760.
- Winchcombe (John), clothier, XXI. 914.
- Winchelsea (Lord), his account of the lava of Aetna, II. 196.
- (Lord), his duel with the Duke of Wellington, XXI. 830.
- WINCHESTER, town in Hampshire, XXI. 880; XI. 203, 204—statute of, XVIII. 191.
- College, XXI. 880.
- WINCKELMANN (J. Joachim), XXI. 880; XVII. 524—on the Apollo Belvedere, III. 300—on Egyptian art, XVII. 47.

WIN—WIN

- WIND, XXI. 881; XIV. 647—law of rotation of, *ib.*—velocity of, 651; XVIII. 64—influence of its direction on the state of the atmosphere, XIV. 677—sea and land winds, 649; III. 737; XVIII. 77—waves caused by, XVII. 581—winds in the Mediterranean, XIV. 470—trade-winds, XVII. 614, 615—their influence on the plague, 751—connection of clouds with, VII. 40—effect on the barometer, IV. 459—in the polar regions, XVIII. 177—effect of, on health, XIX. 609—action of, on ships, XX. 6, 7, 159—velocity and pressure, 21—winds in England, VIII. 718; in Scotland, XIX. 795; in Spain, XX. 488; among the Himalayas, XI. 442—mistral, in France, V. 241; XIV. 470—Vent de Bise, in France, X. 241—hot winds in Australia, IV. 291—Harmattan wind, XI. 229; XX. 271—sirocco, XIV. 470—bora, *ib.*—seste of Madeira, XIII. 799—skai, in Jutland, VII. 747. See Atmosphere, Meteorology, Monsoons, &c.
- , in horses, XI. 642.
- Wind-sucking, a disease, XXI. 565.
- WINDERMERE, lake, XXI. 881, 842; XIII. 177—fish of, III. 157 n., 158; XII. 241.
- Windgauge. See Anemometer.
- Windgalls, XXI. 558.
- Windham (Mr), his opposition to the Peace of Amiens, V. 585, 589—his act for the improvement of the army, 599.
- (General), XVI. 308.
- Windings of rivers, XIX. 208.
- Winding of silk, XX. 281—machine for, *ib.*
- Windischgrätz (Prince), IV. 307, 308; XII. 24.
- Windlass, XIV. 415—differential, 401.
- Windmills, III. 706; XIV. 415—Coulomb on, VII. 462.
- Windows, III. 488; X. 659—first use of glass in, 658—painted glass, 660—stained, 667—lattice or lead windows, 670—sills of, V. 740—sashes, 752—shutters, *ib.*—glazing, 756; X. 669—in Greek architecture, III. 466—rose, or Catherine wheel, 512—window tracery, in the middle ages, XX. 734—abolition of window-tax, V. 672.
- Windpipe. See Trachea.
- WINDSOR, XXI. 881—railway to, V. 722—Castle, IV. 666.
- Soap, XX. 366.
- Castle, river steam boat, XX. 666.
- WINE AND WINE MAKING, XXI. 882—cooling of wines, VII. 102, 103—carbonic acid in, VI. 472—low, distillation of, VIII. 49—imports of, into the United Kingdom, 735—specific gravity of, XII. 89—adulteration of, II. 154; XIV. 441—three classes of, IX. 759—British, 760—making of, 766—wine from raisins, XVIII. 799—clarification of, VI. 755—duties on French wines, XXI. 60—effects of the increase of duties on, 72—reduction of duties in 1825, *ib.*; and in 1860, 73—Champagne, XIV. 312—Port, XVI. 519—Tokay, XII. 17; XXI. 301; IV. 314—wines of Austria, 314—Chile, VI. 550—France, X. 247; state of the wine trade of, in 1843, 219—Germany, 589—Georgia, XIX. 551—Italy, XII. 640—Hungary, 17—Madeira, XIII. 798—Spain, XIV. 107; XX. 489—Lombardy, XIII. 656—Nassau, XV. 801—Portugal, XVIII. 397—Marsala, XX. 246—Valdepenas, XXI. 510—Greece, XI. 16—Johannisberg, XII. 789—Württemberg, XXI. 938—Tuscany, 394—wine measures, 808.
- Winefrid (St) well, at Holywell, XI. 593.
- Wingate (E.) on logarithms, XIII. 554.
- Wingfield, South, manor house, VII. 756.
- Wings of insects, IX. 39—of birds, XVI. 735; III. 85, 92.
- Wing-shells, XV. 388.
- Winkler (Prof.), on electricity, VIII. 526.
- Winning of Collieries, VII. 119.
- Winnipisiopee, lake, XVI. 173.
- Winnowing Machines, II. 283. See Fan-ners.

WIN—WOB

- Winsford, salt at, XIX. 582.
- Winslow (James B.), anatomical labours of, II. 764—on the sympathetic nerve, 815—on monsters, XV. 503.
- town in Bucks, V. 722.
- Winstanley (Mr), his lighthouse at Eddystone, XIII. 465.
- Winter-berry, XVII. 762.
- Winter-green, order of plants, V. 198.
- Winter-palace, Petersburg, XVII. 491.
- Winter's-bark, plant, V. 180.
- WINTERTHUR, Swiss town, XXI. 892.
- Winther (Christian), Danish poet, XIX. 695.
- WINTON (Andrew), prior of Lochleven, XXI. 892—quoted, VI. 191.
- Wintringham on venous tissue, II. 793.
- Winzes, in mining, XV. 224.
- Wire, annealing of, III. 218—fusion of, by electricity, VIII. 592—Wollaston's mode of making fine wire, XIV. 744—zinc wire, flexible and tenacious, III. 219—brass wire deprived of tenacity by acid fumes or damp air, *ib.*—in electric telegraphs, XXI. 95, 96—gold wire, X. 703—wire-drawing, in the steam engine, XX. 596.
- Wire cartridges, XX. 214.
- Wire fences, II. 270.
- Wire micrometers, XIV. 743, 745.
- WIRE-ROPE, XXI. 892; XIX. 414—rigging of, XX. 23.
- Wire-worm, IX. 105, 106.
- WIRKSWORTH, town in Derbyshire, XXI. 892.
- WISBEACH, in Cambridgeshire, XXI. 892; VI. 33, 34.
- WISBY, Swedish city, XXI. 892; X. 729.
- WISCONSIN, one of the United States, XXI. 892, 419—debt of, 428—wines of, 888—taxation in, 428.
- Wiseman (Cardinal), V. 672—on drainage of towns, III. 647, n.—on copying in architecture, 505, n.
- (Richard), on surgery, XIV. 461; XX. 818.
- Wishart (George), IV. 530.
- Wisheart (Robert), bishop, X. 646.
- Wishing, XIX. 111—laws of, 116.
- WISMAR, in Germany, XXI. 894.
- WISSENBURG, in France, XXI. 894.
- WIT, XXI. 894; XVII. 563.
- Witchcraft, III. 313, 315—belief in, IV. 462, n.—in Lapland, XIII. 239.
- Witch-hazel, order of plants, V. 195.
- WITHAM, river in Lincolnshire, XXI. 895; XIII. 491.
- Bridge, XII. 583.
- (Mr), on the effect of a trap dyke on coal, XV. 189.
- Withamite, mineral, XV. 85—optical properties of, XVI. 667.
- WITHER (George), poet, XXI. 895.
- Withering (Dr), on the effects of lightning, VIII. 585.
- Witherite, mineral, XV. 95.
- Withers of a horse, fistula in, XXI. 558.
- Witness, in the English Courts, VIII. 490—grounds of disqualification in, IX. 418, 419. See Testimony.
- WITNEY, in Oxfordshire, XXI. 896.
- WITSUS (Hermann), divine, XXI. 896.
- WITT (John de), Dutch statesman, XXI. 896, 149; VII. 770; V. 423; XI. 576—on life annuities, XII. 395; III. 220.
- Witte (Madame), her model of the moon, IV. 89.
- Wittena-gemote, Anglo-Saxon national council, VIII. 665.
- WITTENBERG, in Prussian Saxony, XXI. 896—form of worship altered at, XVIII. 821.
- Wittichite, mineral, XV. 121.
- Wittingen, wooden bridge at, VI. 384.
- WITTSOCK, in Prussia, XXI. 896.
- Wiveliscombe, in Somerset, XX. 411.
- Wivern, heraldic animal, XI. 334.
- Wladimir. See Vladimir.
- Wladimirsko (Theodore), XXI. 683.
- Woad, culture of, in France, X. 248—used in dyeing, VIII. 301.
- WOBURN, in Bedfordshire, XXI. 896—Abbey, IV. 569—drill, II. 274.

INDEX.

WOC—WOL

- Wocke (M.), his work on insects, IX. 23.
 Wodankies, mineral, XV. 116.
 Woden, XV. 767—Wednesday dedicated to, I. 458, n.
 WODROW (Robert), XXI. 897—on the character of Robert Baillie, IV. 372—manuscripts of, XIII. 401.
 Wohlerite, mineral, XV. 91.
 WOKINGHAM, in Berkshire, XXI. 898.
 WOLCOT (John), Peter Pindar, XXI. 898.
 Wolchite, mineral, XV. 120.
 WOLF (F. August), XXI. 898—in Homer, XI. 599 *et seq.*; XVII. 525.
 —quadruped XIV. 163; XVII. 632—superstition in Oude regarding wolves, 16.
 Wolfart (Dr), his magnetical practice at Berlin, XX. 445—his works on magnetism, 444.
 WOLFE (Charles), XXI. 898.
 —(JAMES), General, XXI. 899—Quebec taken by, V. 464; VI. 159—killed in action, ib.
 WOLFENBUTTEL, in Brunswick, XXI. 899—library of, XIII. 421—palimpsests in, XVII. 209 and n.
 WOLFF (J. Christian Von) or Wolfius, XXI. 899—merits of, as a philosopher and writer, I. 188—his futile attempts to introduce his philosophy into France, ib.—his speculations on heat, 758—his *Monumenta Typographica*, IV. 706—on the Caraites, VI. 228—on hydraulics, XII. 130—on intuition and symbolical cognition, XIV. 585, n. 4; 587, n.; 588, n. 1 and 2—quotation from his *Psychologia Empirica*, 587, 588—contents of his *Psychologia rationalis* and *Cosmia generalis*, 605, n. 1—questions discussed by, ib., n. 2—contents of his *Theologia naturalis*, 606, n. 1—his notion of Cosmology, 605—his construction of telescopes, XXI. 123.
 —J. F.), his work on insects, IX. 11.
 Wolf-fish. See Anarrhicas and Cat-fish.
 Wolfram, XV. 66, 109.
 Wolfsbergite, mineral, XV. 119.
 Wolga. See Volga.
 WOLGAST, town in Prussia, XXI. 900.
 WOLLASTON (William), XXI. 900—his theory on the foundation of moral rectitude, XV. 555.
 —(T. V.), his work on the insects of Madeira, IX. 24; XIII. 800.
 —(Rev. Dr), on the solar spots, IV. 29—his micrometer, XIV. 758.
 —(Rev. F.), his apparatus for determining heights by the ebullition of water, XI. 271.
 —(WILLIAM HYDE), XXI. 900—Huygen's law of double refraction confirmed by, I. 901—on polarization in calcareous spar, 913—his reception of the atomic theory, 938—his contributions to electricity, 972; and other sciences, ib.—compared with Sir H. Davy, ib.—his death, 973—his blow-pipe, IV. 790—his camera lucida, VI. 117—on the spectrum, I. 915, 922; XIII. 452; XVI. 587, 589 n., 594—his cryophorus, VII. 544—his mode of hardening steel, 600—on electrical light, VIII. 546—on the oxidating and de-oxidating powers of electricity, 593—apparatus for the decomposition of water, 595, 596, 597—on inaudible sharp sounds, IX. 45—his mode of making fine wire, XIV. 744—his micrometers, 744, 761—his periscopic doublet and sphere, 772—another doublet, 774—on the illumination of microscopic objects, 795—on optics, XVI. 536, 580, 581, 583, 584 *et seq.*—his method of centering the lenses of an object glass, XXI. 125—his elementary galvanic battery, 611—his small galvanic battery, 626—on revolving magnetism, 638—on weights and measures, 799, 800 *et seq.*
 Wollastonite, mineral, XV. 82.
 WOLSEY (Thomas), Cardinal, XXI. 901; VIII. 698—his disgrace and death, 700—his efforts to revive Greek literature at Oxford, XXI. 454.

WOL—WOO

- Woltmann's mill, XII. 143.
 WOLVERHAMPTON, XXI. 901; XX. 530, 531—cheap clocks made at, VII. 16—gun-locks made at, XI. 100.
 Wolverine, quadruped, XIV. 156—fur of, X. 349.
 Womb, or Uterus, III. 71.
 Wombat, quadruped, XIV. 177; XXI. 31—dentition of, XVI. 449, 450.
 Women, of Afghanistan, II. 206; of Albania, 444; Arabia, III. 353—of ancient Athens, XX. 371—of New Caledonia, IV. 266; New Zealand, 267; Austria, 319; Beloochistan, 642; Bogota, 811; Bolivia, 830; China, VI. 595; Circassia, 731—Cochin-China, VII. 49; Congo, 246; Crete, 495; Dahomey, 620; ancient Egypt, VIII. 434, 440; modern, 444, 445; England, 781, 782; ancient Germany, VI. 606; X. 573—ancient Greece, VIII. 138; modern Greece, XI. 14; Hindustan, 473; the Ionian Islands, XII. 449; Japan, 690; Madeira, XIII. 796; New Holland, IV. 259; Sindh, XX. 306; Sparta, 503; North American Indians, II. 681; Bazeegurs, IV. 525; Loochoo islands, XIII. 691—introduction of women on the stage, II. 120; VIII. 161, 162; XXI. 170—their pelvis larger than in males, III. 13—their organs of generation, 70—breasts, 72—mortality less than of males, 280—castration of, VI. 329—milk of, XV. 11—baneful effects of indiscriminate intercourse in early youth, VI. 606—considered in relation to chivalry, 605 *et seq.*; XIII. 110; XVIII. 107—their character in the Greek drama, VIII. 134; as exhibited in the drama, 86, 87—dress of, XIV. 441—condition of, in factories, 280—condition of, in Mohammedan countries, XV. 304—respect paid to, in England and France, XX. 79, n.—suicides of, 799, 800—enactments regulating their labour in factories, XXI. 790—peculiarity in the physical conformation of Hottentot women, II. 222—dancing-girls, VII. 646; of Egypt, VIII. 435, 443, 448—the Amazons, II. 650—size of heads, in new born females, III. 2—weight of female infants, ib.—bearded women, IV. 529—punishment of scolds, V. 276; VI. 322—concubinage, VII. 229—Shakespeare's female characters, XX. 86. See Bride, Chastity, Female, Marriage, Midwifery, Nursing, Polygamy, Pregnancy, Prostitution, Rape, Seduction, Sex.
 Wonder, sentiment of, XVII. 563.
 Wonder-turner, optical instrument, XVI. 697.
 Wood, or a Wood (Anthony), XXI. 902—on M. Needham's newspapers, XVI. 181—on Selden, XX. 37—on the University of Oxford, XXI. 453, 455.
 —(Lieut.), on the Indus, XII. 378.
 —(Mr), on the rate of speed on railways, I. 885.
 —(W.), his work on insects, IX. 14.
 —(Dr Alexr.), his proposal for testing the common sense of surgeons, XX. 821, n.
 —(Andrew), of Largo, XIX. 764.
 —(Robert), on the ruins of Baalbec, IV. 340.
 —, XXI. 902; V. 81—woody tissue, 69—strength of, VI. 249; XX. 170, 171, 172, 757, 779—diseases of, and modes of preserving, V. 173 (See Dry Rot)—bridges of, VI. 382—charcoal of different kinds of, 421—various senses in which the word is used, VIII. 12—engraving on, 799 (See Wood Engraving)—shrinking of, XII. 816—curving of, ib.—effects of the weather on, ib.—kinds most used in joinery, 817—as fuel, X. 317—in landscape gardening, XVII. 771—turning of, XXI. 390. See Carpentry, Joinery, Planting, Shipbuilding, Timber, Trees.
 Woodard (Captain), his account of a case of severe abstinence, VIII. 22.

WOO—WOO

- WOODBRIDGE, town and river in Suffolk, XXI. 902.
 Wood-bugs, IX. 161.
 Wood-cuts, printing from, XVIII. 548—stereotyping of, 551.
 Wood-cutters of Canada, VI. 142. See Lumbering.
 Wood-cock, IX. 763; XVI. 802—shooting of, XX. 224.
 Woodcroft (Prof. B.), on steam navigation, XX. 636, n—his screw propeller, 658.
 WOOD-ENGRAVING, XXI. 902; VIII. 799.
 Wooden pavement, XIX. 227.
 Woodhead railway tunnel, XVIII. 761.
 Woodhouselee (Lord). See Tytler (A.F.)
 Woodley (Mr), his ascent of Mont Blanc, II. 627.
 Wood-lice, VII. 543.
 Woodpecker, XVI. 774.
 Wood-pigeon shooting, XX. 216.
 Wood's coinage in Ireland, XII. 493, 527.
 Woods (Dr), his photographic process, XVII. 551.
 Wood-sorrel, order of plants, V. 187.
 —plant, V. 188.
 WOODSTOCK, in Oxfordshire, XXI. 904—gloves manufactured at, X. 682.
 Woodville (Dr) on small-pox and cow-pox, XXI. 500.
 WOODWARD (John), XXI. 904.
 —(Mr), his manual of mollusca, XV. 328—on the Veneridae, 350—on the Hippuritidae, 349—on Gastrochoena modiolina, 350—on sea-hares, 272—on the Limneidae, 374—on operculated land snails, 375—on limpets, 579.
 Woodworth (J. C.), his works on insects, IX. 24.
 Woo-e-shan, Bohea tea hills in China, XXI. 84, 85.
 Woof, XXI. 780. See Warp.
 WOOL AND WOOL TRADE, XXI. 905; II. 353, 354; XIV. 133, 212—wool of Australia, IV. 288, 292, 299; Cashmere, VI. 309; Canada, 147; Spain, XX. 489; Saxony, XIX. 684, 685—Tibet, XXI. 247—Russia, XIX. 542—wool manufactures of Hawick, XI. 246; Galashiels, X. 368—probable cause of wool curling, XI. 182—its exportation prohibited, II. 262; V. 527—law of Henry V. regarding foreigners buying wool in England for exportation, VII. 77—bleaching of, IV. 769—Dr. Young's instrument for measuring the fineness of, VI. 651—dyes better than cotton and linen, VIII. 274, 277—structure of, 274—felted of, 275—fulling of, ib.—importance of, ib.—scouring of, ib.—dyeing of, ib.—method of dyeing it red, 288; yellow, 297; blue, 302; black, 305; brown, 308, 313; green, 209; violet, purple, &c., 311; orange, 313; grey, &c., ib.—value of imports of, into Great Britain and Ireland, 735—imports from Cape of Good Hope, X. 715. See Sheep.
 Wool-hats, XI. 240, 241.
 WOOLLEN AND WORSTED MANUFACTURES, XXI. 913—of Ayrshire, IV. 333—Denmark, VII. 747—Devonshire, 764—Derbyshire, 755—England, VIII. 728—France, X. 251—Germany, 590—Gloucestershire, 681—Holland, XI. 583—Illinois, XII. 362—Ireland, 492, 519—Scotland, XIX. 805—Pennsylvania, XVII. 396—Philadelphia, 510—Persia, 424—Spain, XX. 490—Somersetshire, 410—Yorkshire, XIV. 287; XXI. 958—Tipperary, 287—Tyrone, 408—Wiltshire, 879—Wisconsin, 894—value of imports of into United Kingdom, VIII. 735; of exports, 736—salubrious nature of woollen manufacture, X. 368—calendering of woollen goods, VI. 91, 92—card, 231.
 WOOLER, town in Northumberland, XXI. 926.
 Woolhope limestone, XV. 198.
 Woolhouse on the satellites of Jupiter, IV. 91—on comets, 94.
 Wool (Dr), his Life of Warton, XXI. 733.
 Woollet, his engravings, VIII. 808.
 Woolley (Rev. Joseph), his rule for cal-

WOO—WOT

- culations in shipbuilding, XX. 145—rule for determining the time of oscillation, 157—his descriptive geometry, 184.
 WOOLSTON (Thomas), XXI. 926.
 WOOLWICH, XXI. 926; XIII. 67—Royal Military Academy at, II. 71—testing of cannon at, VI. 180—dockyard, VIII. 80—ropery, 81.
 Woorali or Woorari, poison, XIV. 438; XVII. 702.
 Wootz of India, VII. 601—its value in cutlery, 600, 601.
 WORCESTER, XXI. 926—battle of, V. 415—early newspapers of, XVI. 186—porcelain works, XVIII. 437.
 —College, Oxford, XXI. 459.
 —(Marquis of), steam-engine invented by, XX. 574, 577—his experiment of heating water in a close vessel, 557.
 —(FLORENCE OF), historian, XXI. 929.
 —(WILLIAM OF), chronicler, XXI. 929.
 WORCESTERSHIRE, XXI. 927—additions to the county of, VIII. 719—population and value of property, 754—salt produced in, XV. 247—woollen manufactures of, XXI. 914.
 Worde (Wynkyn de), printer, XVIII. 534, 536—his types, XXI. 401—on the dislike of spirits to bells, IV. 629.
 Words, the signs of ideas, X. 745. See Language, Speech.
 WORDSWORTH (William), XXI. 929—on fancy, XVIII. 93—character of his poetry, 126—recalled our poetry to truth and nature, XV. 23—on Ossian, XVII. 7—his connection with Coleridge, VII. 109—Jeffrey's criticism on, XII. 717.
 —(CHRISTOPHER), XXI. 929.
 Work, in mechanics, XIV. 403.
 Workhouses, XVIII. 311, 314—first provided in Paris, 185.
 Working machines, classified, XIV. 415.
 WORKINGTON, in Cumberland, XXI. 932—coal-mines of, VII. 577.
 Workmen and their employers, laws relating to, XIV. 346.
 Works of God, XXI. 195.
 WORKSOP, in Nottingham, XXI. 932.
 World, map of, X. Plates—on Mercator's projection, Plates—chart of, shewing magnetic curves, XIV. 60—produce of gold and silver in different parts of the, XVIII. 463. See Earth, Geography.
 WORM (Olaf), physician, XXI. 932.
 —of a still, VIII. 47, 49.
 —of the dog, III. 100.
 Wormian bones, III. 21.
 Worm-like serpents, XIX. 55.
 Worm-shells, XV. 383.
 Worms, red-blooded, XI. 290—earthworms, 301—ship-worm. See Tereido.
 —(intestinal), XXI. 974—obscurity of their origin, 975, 976 *et seq.*; III. 175—diseases produced by, XXI. 977; XVII. 691—reproduction of, 688—in the domestic animals, XXI. 569, 578—worm powder recommended by Dr Alston, II. 630.
 WORMS, German city, XXI. 932—diet at, in 1521, XIII. 727.
 Wormwood, plant, V. 197.
 Worship, public, XIX. 563—due to God, XXI. 196; to Christ, 209—as a means of grace, 219—places of worship of every religious body in England and Wales, VIII. 745; in Scotland, XIX. 801. See Devotion.
 Worsley, canal from, to Manchester, V. 367.
 Worsted manufacture. See Woollen and Worsted Manufacture.
 Wort, in brewing, V. 325, 337—distillation of, VIII. 48, 49.
 Worthies of Surrey, XX. 837—of Sussex, 840.
 WORTHING, in Sussex, XXI. 933.
 Worthite, mineral, XV. 86.
 WOTTON (Sir Henry), XXI. 933—on angling, III. 147—the first who used the

WOT—WUT

- erroneous phrase, "Gothic architecture," 447—his conditions of building well, 490, *n.*—Walton's Life of, XXI. 696.
- WOTTON (William), divine, XXI. 933—his work on ancient and modern learning, IV. 658.
- Wounds, death from, XIV. 431—surgical treatment of, XX. 822—pensions for, XVI. 120.
- WOUWERMAN (Philip), Dutch painter, XXI. 933; XI. 591.
- Wrangel (General), XX. 848, 852.
- (Baron), XVII. 515, 583—on the winds of the polar regions, XVIII. 177.
- Wrangel's volcano, XVII. 590, 645.
- Wrath (Cape), XX. 841.
- Wray (Leonard), on the supply of timber, XX. 173, 174—on teak timber, XXI. 277; green-heart timber, *ib.*—on the sugar-bearing plant, *imphee*, XX. 798—his estimate of the supply of wool, XXI. 907.
- Wreath, in heraldry, XI. 337.
- Wreck-chart of the British Islands, XIII. 446—wrecks of British merchant vessels, XX. 28. See Shipwreck.
- Wreckers, in the Bahama islands, IV. 367.
- Wrede (Baron Von), on optics, XVI. 666—his visit to Hadramaut, III. 356.
- WREN (Sir Christopher), XXI. 933—his knowledge of the balance of arches, III. 406, 408—his dome vaulting in St Paul's, 414—character as an architect, and works of, 454, 455—his scheme for rebuilding London after the great fire, 496—centres employed by, VI. 373—his roof of the theatre, Oxford University, XIX. 386—school of masonry formed by, XX. 711—St Paul's designed by, XIII. 670—his monument, *ib.* See Paul's (St).
- bird, XVI. 756.
- Wrestling, XI. 170.
- WREXHAM, town in Denbighshire, XXI. 937—church of, VII. 736.
- Wright (Edward), X. 495, 505—on logarithms, XIII. 553—on navigation, XVI. 4.
- (Mr), his apparatus for estimating (Thomas), on the milky way, I. 844 and *n.* 2.
- the calorific value of coal, XX. 631.
- Wrist, bones of the, III. 32—joints, 34—muscles, 38.
- WRIT, in Law, XXI. 937.
- Writers to the Signet, VI. 764—in Edinburgh, VIII. 395—their library, *ib.*; XIII. 402.
- WRITING, art of, XXI. 937—origin of alphabetic, II. 606—phonetic system, 607—was it known in Homer's time? XI. 598—hieroglyphic, hieratic, and demotic systems of, 369—Aistle on the origin and progress of, II. 612; IV. 706—writing in cypher, VI. 728—among the Hebrews, XVII. 401—short-hand, XX. 675; II. 551 (See Stenography)—remarks on written characters, I. 66, 67. See Alphabet, Characters.
- Wrongs, private, English law regarding, VIII. 783.
- Wry-neck, bird, XVI. 777.
- Wulfenite, mineral, XV. 106.
- Wulff (C. R.), his work on insects, IX. 22.
- Wunch (Prof.) on the spectrum, XVI. 593.
- Wurmser (General) X. 81 *et seq.*; XV. 787 *et seq.*
- Wurno, African town, XI. 778; XIX. 564, 565.
- WURTEMBERG, XXI. 937—army of, III. 652—its obligations to Bilfinger, IV. 722—coins of, XV. 442, 445—monarchy of, 414—postal system, XVIII. 424—weights and measures, XXI. 814.
- Wurtz on animal magnetism, XX. 424.
- WURZBURG, Bavarian city, XXI. 940; IV. 518—university of, XXI. 492.
- WURZEN, town in Saxony, XXI. 940.
- Wutzer, on nervous ganglions, II. 806, 811, 812.

WYA—XEN

- Wyandotte cave, in Indiana, XII. 375.
- WYATT, family so named, XXI. 940.
- (BENJAMIN), architects, XXI. 940.
- (Charles), on the invention of the spinning machine, XX. 509.
- (JAMES), architect, XXI. 940.
- (John), on roller spinning, XX. 509, 510.
- (L. WILLIAM), architects, XXI. 941.
- (M. COATES), sculptor, XXI. 941.
- (MATTHEW DIGBY), XXI. 941.
- (RICHARD JAMES), sculptor, XXI. 941.
- (SAMUEL), architect, XXI. 940.
- (Sir Thomas), insurrection of, VIII. 708.
- (Sir T.), poetry of, XVIII. 121—sonnet on, VIII. 796.
- (THOS. HENRY), architect, XXI. 941.
- Wyatt's patent slating, V. 745—improvements in joinery, XII. 805.
- WYATVILLE (Sir Jeffrey), XXI. 941.
- WYCHERLEY (William), XXI. 941, 171—dramatic works of, VIII. 163.
- Wychwood forest, XVII. 36.
- WYCLIFFE (John), XXI. 944; VIII. 686—his translation of the Scriptures, IV. 702; specimen of that work, VIII. 795—the English language improved by, VI. 434—at Oxford, XXI. 454—Tytler's Life of, 414.
- WYCOMBE (Chipping or High), town in Bucks, XXI. 947.
- WYE, river, XXI. 948; V. 312; XI. 349; XV. 498; XVIII. 748.
- river in Derbyshire, VII. 754.
- Wyley (Andrew), on dolomite rocks, XV. 152.
- Wyman (Prof.), on fossil reptiles, XVII. 136.
- WYMONDHAM, town in Norfolk, XXI. 948—mediaeval roof at, XIX. 392.
- WYNDHAM (Sir William), XXI. 948.
- (Right Hon. William), his administration, V. 546—his alien bill, *ib.*—his Act for the preservation of the person of George III., 558—his reply to the French ambassador, 546; and to Bonaparte's letter to George III., 569. See Grenville (Lord).
- Wynkyn de Worde. See Worde (Wynkyn de).
- WYTTENBACH (Daniel), philologist, XXI. 948.
- Wyvis (Ben), Scottish mountain, XIX. 426.

X

- X, letter of the alphabet, XXI. 949—in abbreviations, II. 21.
- XALAPA, town in Mexico, XXI. 949; XII. 671.
- Xanthichthys, genus of fishes, XII. 313.
- Xanthin, VIII. 282.
- XALISCO, in Mexico, XXI. 949.
- Xanthippe, XX. 376, 377.
- Xanthippus, Lacedemonian, VI. 289.
- Xanthite, mineral, XV. 85.
- Xanthokon, mineral, XV. 122.
- Xanthornus, genus of birds, XVI. 762.
- Xanthoxylaceae, nat. order of plants, V. 189.
- XANTHUS, city in Lycia, XXI. 949.
- river, XXI. 949; XIX. 688.
- XAVIER (Francis), missionary, XXI. 949—introduced Christianity into Ceylon, VI. 397—an associate of Loyola, XII. 751—his appearance in Japan, 697.
- de Maistre (Count), on water-spouts, VIII. 586.
- (Silva), his conspiracy in Brazil, V. 285.
- Xenagoras, geometer, X. 467.
- XENOCRATES, philosopher, XXI. 949.
- Xenodon, genus of serpents, XIX. 55.
- Xenolite, mineral, XV. 86.
- Xenopeltis, genus of serpents, XIX. 53.
- XENOPHANES, XXI. 950—philosophy of, VIII. 522; XVII. 232.

XEN—YAR

- XENOPHON, XXI. 950—his Anabasis, II. 743—his account of Cyrus, VII. 612; XV. 807—his retreat with the 10,000, VII. 613—on field sports, XII. 31—not mentioned by Plato, XVII. 791—his notice of the ruins of Nineveh, XVI. 273—his commendation of agriculture, XVIII. 235, *n.* 2—his account of Socrates' manner of teaching, XX. 374—his admiration of that philosopher, 379—his Memorabilia of Socrates, 396, 401, 402.
- of Ephesus, XXI. 950.
- Greek surgeon, XX. 811.
- Xenops, genus of birds, XVI. 768.
- Xenos, genus of insects, IX. 220.
- Xenotime, mineral, XV. 94.
- XERES, or JEREZ DE LA FRONTERA, Spanish city, XXI. 950—battle of, XX. 460—wine of, XXI. 884. See Sherry.
- Xerxes, king of Persia, XVII. 434—his invasion of Greece, IV. 199; XX. 500—effects of that invasion on Athens, IV. 160—subdues Egypt, VIII. 465.
- Xestorhynchus, fossil reptiles, XVII. 139.
- XIMENES DE CISNEROS (Francisco), cardinal, XXI. 951; XX. 468—his polyglott Bible, IV. 497.
- on hydraulics, XII. 144, 145.
- Xingu, river, V. 292.
- Xiphias, genus of fishes, XII. 295, 297.
- Xiphodon, genus of fossil mammals, XVII. 165.
- Xiphoidel, family of fossil fishes, XII. 346.
- Xiphophorus, genus of fishes, XII. 252.
- Xiphopterus, genus of fossil fishes, XII. 346.
- Xiphostoma, genus of fishes, XII. 247.
- Xiphorynchus, genus of fishes, XII. 247.
- Xiphidria, genus of insects, IX. 184.
- Xolotl, Mexican king, XIV. 699.
- Xorides, insects, IX. 188.
- Xyela, genus of insects, IX. 184.
- Xylobalsamum, IV. 401.
- Xylochor, mineral, XV. 76.
- Xylocopa, genus of insects, IX. 199.
- Xylophaga, genus of mollusks, XV. 352.
- Xylophagi, insects, IX. 142, 230.
- Xylophagus, genus of insects, IX. 230.
- Xylophilus, genus of insects, IX. 138.
- Xylota, genus of insects, IX. 239.
- Xylotomæ, family of insects, IX. 232.
- Xylotrogi, family of insects, IX. 112.
- Xyrichthys, genus of fishes, XII. 267.
- Xyridaceæ, nat. order of plants, V. 213.
- Xysta, genus of insects, IX. 147.

Y

- Y, letter of the alphabet, XXI. 952.
- Yablonoi Mountains, XX. 537.
- Yacht clubs, benefits resulting to ship-building from, XX. 139—the Titania and America yachts, 164.
- Yack, or Yak, in zoology, XIV. 215; III. 740—in India, XI. 455—Tibet, XXI. 247.
- Yacous, birds, XVI. 785.
- Yafa (El), in Arabia, III. 356.
- YAKUTSK, in Asiatic Russia, XXI. 952—temperature at, XVIII. 178—climate, XIX. 519—population, 521.
- Yale College, VII. 295; XVI. 175—library of, XIII. 429.
- Yale's lock, XIII. 546.
- Yam order of plants, V. 210.
- YANG-TSE-KIANG, Chinese river, XXI. 952; XVII. 647.
- Yani, XX. 51.
- YANINA, XXI. 952; II. 443.
- Yapura, river, V. 292.
- YARD of a ship, XXI. 952.
- standard measure, XXI. 799, 803.
- Yare, river in Norfolk, XVI. 289; XX. 790; XXI. 953.
- YARKAND, XXI. 952.
- YARMOUTH, in Norfolk, XXI. 952; XVI. 290—herring fishery at, IX. 642 and *n.* 1—bloaters, 643.

YAR—YOR

- Yarmouth, in Isle of Wight, XXI. 861.
- Yarn, cotton, prices of, VII. 446—linen, XIII. 495. See Cotton Manufacture, Linen, &c.
- Yaropolk, XIX. 470.
- YAROSLAV, XXI. 953; XIX. 471. See Jaroslav.
- Yarra-Yarra, Australian river, XIV. 477, 478.
- YARRELL (William), XXI. 953—on fishes, XII. 230, 253, 269, 271, 284, 290—on mackerel, IX. 645—on British birds, XVI. 733.
- YARROW, river, XXI. 953; XX. 41.
- YASSY, XXI. 953. See Jassy.
- Yates (Mr), his vindication of Socinianism, XXI. 208.
- (Thomas P.), his work on insects, IX. 6.
- Yawl, IV. 800.
- Yeadell (Thomas), on moles, XXI. 547, *n.* 1, 2, 3, 4.
- Year, astronomical and civil, VI. 76—solar, *ib.*—leap, 77—Roman, *ib.*, 666—lunar, 79—Grecian, *ib.*—Mahommedan, *ib.*, 673—Hindu, 353, 676—Olympic, 665—Jewish, 669—Egyptian, III. 783; VI. 670; VIII. 449, 450—Chinese, III. 784; VI. 665—Druidical, VIII. 186—new-year festival, in China, VI. 570—new-year's gifts, X. 622—confusion of civil with ecclesiastical, XVIII. 320, *n.* 2. See Astronomy, Chronology.
- YEAST, XXI. 953; VI. 441—its use in baking, IV. 380; in brewing, V. 328; in distillation, VIII. 49—nature of, V. 328—yeast plant figured, 68.
- YEDDO, or Yedo, Japanese town, XXI. 953. See Jeddo.
- YELL, Shetland island, XXI. 953; XX. 113.
- Yellow, colour, varieties of, XV. 59—dyeing of, VIII. 295, 318—for printing, XVIII. 556.
- fibrous system, in anatomy, II. 824.
- RIVER, in China, XXI. 953.
- SEA, XXI. 953; XVII. 574, 577.
- Yellow-earth, XV. 83.
- Yellow-fever, Dr Rush's treatment of, XIX. 466.
- Yellowly (Dr), on the gastric mucous membrane, II. 837.
- YEMEN, XXI. 953; III. 341 *et seq.*
- Yenikalé, IV. 744; VII. 505—Strait of, IV. 335.
- Yenisei, or Yenisey river, XIX. 548; XVII. 605, 647; XXI. 954.
- YENISEISK, in Asiatic Russia, XXI. 953; XIX. 521.
- Yenite, mineral, XV. 90.
- Yeomen of the Guard, XI. 775—institution of, VIII. 694.
- Yeou, river, V. 51.
- YEOVIL, in Somersetshire, XXI. 954—glove-making at, XX. 410; VIII. 731.
- Yesso, Japanese island, XXI. 954; XII. 688.
- Yew order of plants, V. 209.
- Yew-tree, XVII. 757; V. 209—use of its wood, XXI. 278—specific gravity of, XII. 89—age of, II. 235—large trees, XXI. 278—Irish yew, IX. 516.
- YEZD, Persian city, XXI. 954.
- Yezdijird, king of Persia, XVII. 436.
- era of, VI. 674.
- Yoldia, fossil mollusks, XVII. 106.
- Yolofs, or Jolofs, African tribes, II. 221, XX. 50, 51.
- YONNE, in France, XXI. 954.
- YORK, XXI. 955—archbishop of, III. 423—archbishopric of, VIII. 743—a county of itself, 721—lodge of free-masons at, XIV. 337.
- (Duke of), Lord High Admiral, under Charles II. VIII. 85.
- (Frederick, Duke of), his marriage, V. 540—his campaign of 1794, 554—his expedition to Holland, 568, 572, 573—his connection with Mary Ann Clarke, 605—vested with the custody of the king's person, 623—his declaration against the Catholic claims, 642.

YOR—YOU

- York Minster, XXI. 955; III. 447, 481, 482, 517—great bell of, IV. 629—stained-glass windows, X. 668—library of, XIII. 395. — in Upper Canada, VI. 145. — (New). See New York. — paving stone, XX. 711. — and Lancaster, wars of, VIII. 690.
- YORKSHIRE, XXI. 956—woollen and worsted manufactures of, VIII. 728; XIV. 287; XXI. 916, 917 *et seq.*—wages of woollen manufacturers in, 919—flax trade of, XIV. 288—great oak in, XXI. 270—population and value of property in, VIII. 754.
- Youatt (Mr), his microscopic examination of wools, XXI. 905—on veterinary science, 574, 575.
- YOUGHAL, Irish town, XXI. 960.
- Young (Adam), his fire-escape, XIII. 438. — (Andrew), on the time when parr become smolts, IX. 592—on the salmon of the river falling into Dornoch Firth, 598—on the conversion of smolts into grilse, 596 and *n.* 1; and of grilse into salmon, 597. — (ARTHUR), XXI. 960—on small farms, VII. 428—on small estates, 432—on the war against cottages in England, 434—on the excise, IX. 449; XXI. 59—on the population of Ireland, XII. 508; on the climate of, 504—his description of Coalbrook Dale, XX. 230—on the soil of Tipperary, XXI. 33. — (Brigham), Mormonist, XV. 591—troops sent against, XXI. 498. — (Charles), actor, XXI. 176. — (EDWARD), XXI. 960—his dramatic works, VIII. 164—his poetry, XVIII. 125. — (Sir Henry), governor of Tasmania, XXI. 33. — (Sir H. E. F.), his reports on South Australia, IV. 297. — (James), surgeon, XX. 818. — (James), his galvanic battery, XXI. 613. — (Dr Matthew), on capillary attraction, XII. 91, 95, 97—his experiments in hydraulics, 147. — (THOMAS), XXI. 961—his early education and attainments, I. 893—residence at Edinburgh, 894—character of his investigations, *ib.*—his lectures on Natural Philosophy, *ib.*—on the undulatory theory of light, 896—his eriometer, 897; table of substances measured by, XIV. 760—on interference of light, I. 897; diffractive bands of, *ib.*—opposition to his views, 898—on the rainbow, *ib.*; XIV. 679—his anonymous researches, I. 900—his articles in the Quarterly Review, *ib.*; and in the Encyclopædia Britannica, *ib.*—connection of his optical discoveries with those of Fresnel, *ib.*—on the physiology of vision, *ib.*—on hieroglyphics, *ib.*; II. 607—his method of interpreting the ancient Egyptian characters, XI. 377—on the inscriptions of the Rosetta stone, 378—on the character of Egyptian monuments, 404—his character, personal and philosophical, I. 732, 901; XI. 408—his death, I. 901—Bunsen's criticism on, XI. 408—his theory of the tides, I. 818—on the tides, XXI. 250—article on Tides in this work, I. 819; XXI. 249, *n.*—his Life by Dr Peacock, I. 818—his solution of the principle of capillary attraction, 732—on the Egyptian language, XIII. 218—on the affinities of language, 197—misled by a table in Morgans on Life Assurance, III. 223—on aurora borealis, IV. 249—on bathing, 501, 502—his introductory observations to the article Carpentry in this work, VI. 249 and *n.*—on chromatics, 643 *et seq.*; his article Chromatics in this work, XVI. 536—on cohesion, VII. 57 *et seq.*—on dew, 768—lectures of, 668—on light, XIII. 450, 453; XVI. 598—on optics, 536, 546, 547, 607, 623 *et seq.*—on the spectrum, 592—on the eye, 694—his formula representing the law of the pressure and tempe-

YOU—ZAN

- perature of steam, XX. 565—on the strength of iron pillars, 178—on the pendulum, XXI. 800—on the laws relating to weights and measures, 801; his article on, in former editions of this work, 807.
- Younger (John), on salmon fishing in the Tweed, IX. 614, 615.
- Youth, XIV. 425—*as a bar to capital punishment*, 445.
- Youze, in zoology, XIV. 169.
- Ypanema, in Brazil, iron-works at, V. 299.
- YPRES, in Belgium, XXI. 966—lace of, XIII. 143—poor-law of, XVIII. 300, *n.*
- Ystwith, river, VI. 234.
- Yssel, river, bridge over, XII. 598.
- Yttria, XV. 65.
- Yttrium, XV. 488.
- Yttrocerite, mineral, XV. 93.
- Yttrotantalite, mineral, XV. 110.
- Yttrotitanite, mineral, XV. 91.
- Yttroilmenite, mineral, XV. 109.
- YRIARTE (Thomas de), XXI. 966.
- YRIEIX (St), town in France, XXI. 966.
- YSSENGEAUX, town in France, XXI. 966.
- Ystad, town in Sweden, XXI. 966.
- YUCATAN, XXI. 966; XIV. 726, 718—ruined cities in, II. 697—architectural remains, III. 502.
- Yugs, Hindu eras, XII. 788.
- Yuma language, XIII. 221.
- YUNNAN, in China, XXI. 966.
- Yunx, genus of birds, XVI. 777.
- Yupanqui, Inca, VI. 552.
- YVERDUN, in Switzerland, XXI. 966.
- YVETOT, in France, XXI. 966.
- Yzer, river, IV. 611.

Z

- Z, letter of the alphabet, XXI. 967
- ZAADAM, town in Holland, XXI. 967.
- Zabrus, genus of insects, IX. 90.
- Zabulun, tribe of, XVII. 192.
- ZACATECAS, Mexican state and city, XXI. 967; XIV. 726, 718.
- Zacatula, in Mexico, XIV. 723.
- Zacchia (Paulo), on medical jurisprudence, XIV. 423.
- ZACCHARIÆ (K. Salomon), German jurist, XXI. 967.
- ZACH (Baron Von), XXI. 967; I. 835, 834, *n.* 3—his laughable mistake about Schehallien, 834 *n.* 2—his astronomical publications, III. 813, 814—his catalogue of stars, IV. 80—on the motion of the stars, 81—on the number of, 82, 83—his interview with Mezzofanti, XIV. 732.
- Zagrab, or Agram, II. 244.
- Zahara. See Sahara.
- Zainer (Ginther), early printer, XVIII. 532.
- Zaire, river, VII. 247. See Congo.
- ZALEUCUS, Locrian legislator, XXI. 967.
- Zaluski library, XIII. 425.
- Zama, battle of, VI. 299; XIX. 311.
- Zambecari's balloon, II. 178.
- ZAMBESI, African river, XXI. 967; II. 214; XV. 669; XVII. 608—Falls of, 601, 608.
- Zamboni (Prof.), his dry pile, XXI. 619.
- Zambos, XIV. 719.
- Zamfra, African country, XI. 778.
- Zamorano (Roderico), on navigation, XVI. 4.
- Zanclus, genus of fishes, XII. 300, 302—fossil, 344.
- ZANESVILLE, in Ohio, XXI. 967; XVI. 490—canal, *ib.*
- Zanfara, in Houssa, XI. 776, 728. See Zamfra.
- Zangeia, in Houssa, XI. 779.
- Zannone, island, XVIII. 293.
- Zanotti (M.), electrical experiments of, XXI. 635.
- Zansz (Zacharias), inventor of the compound microscope, XIV. 763.
- ZANTE, XXI. 968; XII. 453.
- Zantedeschi (Prof.), on solar magnetism,

ZAN—ZIN

- XIV. 13; XVI. 596—on the lines in the spectrum, 592.
- ZANZIBAR, XXI. 968; II. 228.
- Zaphrentis, fossil corals, XVII. 97.
- Zapolya (John), king of Hungary, XII. 20.
- ZARA, Austrian city, XXI. 968.
- Zaragoza. See Saragossa.
- Zaria, XI. 778.
- ZARSKOE-SELO, Prussian town, XXI. 968.
- Zastrow on fortification, IX. 837.
- ZEA, XXI. 968. See Ceos.
- Zeagonite, mineral, XV. 77.
- ZEALAND, Danish island, XXI. 968; VII. 745, 346—manufacture of linen in, 747. — province, XXI. 968. — (NEW), XXI. 968. See New Zealand.
- ZEBID, Arabian city, XXI. 968.
- Zebra, XIV. 202; II. 217.
- Zebra-wood, V. 190.
- ZECARIAH, the prophet, XXI. 968.
- Zechstein formation in geology, fossil fishes of, XII. 348–350, 352.
- Zegzeg, XI. 776, 778, 779.
- Zeidae, family of fishes, XII. 299.
- Zeihers' burning mirrors, VI. 11, 12.
- Zeitun, town in Greece, XIII. 303.
- ZEITZ, Prussian town, XXI. 969.
- Zell (Ulric), printer, XVIII. 526. — in Styria, XIV. 303.
- ZELLE, town in Hanover, XXI. 969.
- Zeller (P. C.), his work on insects, IX. 23.
- Zelus, genus of insects, IX. 163.
- ZEMBLA (Nova), XXI. 969. See Nova Zembla.
- Zemindars, IV. 649; XI. 513, 518.
- Zemlin, Austrian town, XX. 43.
- Zendavesta, III. 259; XIII. 208.
- Zend language, III. 747; XIII. 208—study of, XVII. 529—Rask's dissertation on, XVIII. 808.
- Zenith, IV. 1.
- Zenith-sector, by Ramsden, XXI. 331, 335; by Airy, *ib.*
- ZENO of Ella, XXI. 669. — the Stoic, XXI. 970—character of his philosophy, I. 319. See Stoics. — Roman emperor, VII. 311.
- ZENOBIA, queen of Palmyra, XXI. 970; XVII. 221; XIX. 349—her invasion of Egypt, VIII. 473—instructed by Longinus, XIII. 685—defeated by Aurelian, XI. 318.
- Zenta, battle of, XXI. 370.
- Zeolites, XV. 75—of Glen Farg, XVII. 457.
- ZEPHANIAH, the prophet, XXI. 970.
- Zephyrius, genus of insects, IX. 208.
- ZEPHYRUS, XXI. 971.
- Zerbis (Gabriel de), II. 756.
- ZERBST, German town, XXI. 971.
- Zermanaya, river, VII. 627.
- Zerubbabel, XII. 732, 767—temple of, 742.
- ZETLAND, XXI. 971. See Shetland.
- Zetterstedt (J. W.), his works on insects, IX. 16.
- Zeuglodon, genus of fossil whales, XVII. 166—teeth of, XVI. 445.
- Zeus, genus of fishes, XII. 299—fossil, 345.
- Zeuss (J. C.), on the Celtic, XVII. 530.
- Zeuxia, genus of insects, IX. 249.
- ZEUXIS, Greek painter, XXI. 971—paintings of, XVII. 54.
- Zeuxite, mineral, XV. 89.
- Zeuzera, genus of insects, IX. 212.
- ZHUKOVSKY (V. Andreevich), Russian poet, XXI. 971.
- Zibelline, in zoology, XIV. 157.
- Ziegler (Jo. Henrico), his experiments on the force of steam, XX. 557.
- Ziezza, Spanish town, IV. 722.
- Zimisce (John), XIX. 470.
- ZIMMERMANN (J. Georg), XXI. 971—on the compressibility of water, II. 102; XII. 77—on the diversity of the human complexion, VII. 225. — (C.), his work on insects, IX. 17.
- ZINC, XXI. 971; XV. 66—mines, 246—imports of, *ib.*—in chemistry, VI. 491, 438—changes in its texture produced by wire-drawing, &c. III. 219—sulphuret of, IV. 772—its compounds with copper, V. 277; VI. 497—crystallisation of sulphuret of,

ZIN—ZUM

- VII. 563—specific gravity of, XII. 88—poisonous quality of, XIV. 434—distribution of, XVII. 622—in Persia, XVIII. 668—as a covering for roofs, XIX. 374—cohesion of, XX. 757—diamagnetism of, XIV. 31.
- Zinc red, XV. 112.
- Zinc-blende, XV. 121.
- Zinc-bloom, XV. 100.
- Zincite, mineral, XV. 112.
- Zinckenite, mineral, XV. 119.
- Zincography, XIII. 512; XXI. 336.
- Zinghis-Khan. See Genghis-Khan.
- Zingiberaceæ, nat. order of plants, V. 211—region of, 228; XVII. 628.
- Zinn (J. G.), anatomist, II. 765.
- ZINZENDORF (N. L.), Count of, XXI. 971; IV. 813—Wesley's visit to, XXI. 835.
- Zion, or Sion, XII. 737—Episcopal church on, 735.
- Ziphias, in zoology, XIV. 231.
- Zircon, XV. 87; XVII. 623—system of rings formed in, XVI. 652.
- Zirconia, XV. 65.
- Zirconium, VI. 488.
- Zirmie, XI. 778.
- ZISKA (John), XXI. 972.
- ZITTAU, in Saxony, XXI. 972.
- ZNAIM, town in Austria, XXI. 972.
- Zoarces, genus of fishes, XII. 310.
- Zoba'ah, Egyptian whirlwind, VIII. 422.
- ZODIAC, XXI. 972—signs of the, IV. 12, 80.
- Zodiacal light, IV. 31.
- Zodion, genus of insects, IX. 244.
- Zoisite, mineral, XV. 85.
- ZOLLVEREIN, XXI. 972; IX. 401; XI. 212; XVIII. 658.
- ZOMBOR, town in Hungary, XXI. 972. See Sombor.
- ZONARAS (Joannes), XXI. 972—on the burning glasses of Archimedes, VI. 4.
- Zones of the earth, X. 483—of terrestrial vegetation, V. 225, 226; XVII. 626—of marine vegetation, V. 229; XVII. 636.
- Zonitis, genus of insects, IX. 136.
- Zoocarpes, III. 200, 204.
- ZOOLOGY, XXI. 672; III. 168—its subjects immensely increased by palæontology, XVII. 91—of Egypt, VIII. 431—Canary Islands, VI. 164—Scotland, XIX. 798. See the different countries, and the articles referred to in vol. III. 193; also Physical Geography, Animals, Comparative Anatomy, Palæontology, &c., &c.
- Zoonomy, II. 748.
- Zoophaga, bones of the, III. 75 *et seq.*—teeth, 105, 106.
- Zoöphorus, in architecture, III. 514.
- ZOOPHYTES, XXI. 973; II. 772; III. 169—characteristics of, 184—of Africa, II. 218.
- Zoosperma, animalcules, III. 203 *n.*
- Zoospores, V. 143, 147.
- Zootomy, II. 748.
- Zophosis, genus of insects, IX. 129.
- Zorn (J. H.), on birds, XVI. 728.
- Zorndorf, battle of, XVIII. 653.
- ZOROASTER, XXI. 1009; XIII. 810; XVII. 433, 435—Anquetil's publication of fragments ascribed to, III. 259.
- Zoromania, African people, XI. 778.
- ZOSIMUS, historian, XXI. 1009.
- Zouaves, XIX. 503—at the battle of Alma, *ib.*
- Zouga, African river, II. 211.
- Zoutman (Admiral), V. 496.
- ZSCHOKKE (J. H. Daniel), German writer, XXI. 1009.
- Zuboff (Plato), XIX. 489 *et seq.*
- Zucchi (Father), not the inventor of the reflecting telescope, XVI. 523.
- Zuela, town in Fezzan, IX. 530.
- Zug, Swiss canton, XXI. 1010; XX. 882.
- ZUIDER ZEE, XXI. 1010; XI. 581.
- ZULLICHAU, Prussian town, XXI. 1010.
- Zulu Kafirs, XIII. 32, 36; XV. 803, 804.
- Zumalacarregui (Don Thomas), XX. 478, 479.
- Zumpango, lake, XIV. 722.
- ZUMPT (Carl Gottlob), XXI. 1010.

ZUN—ZUR	ZUT—ZWI	ZWO—ZYG	ZYG—ZYG
Zundererz, mineral, XV. 122. Zurbano (General), XX. 482. ZURBARAN (Francisco), Spanish painter, XXI. 1010. ZURICH, in Switzerland, XXI. 1011; XX. 882—Lake of, 889—silk manufacture, 278—libraries, XIII. 424—university of, XXI. 492—water machine, XII. 182.	ZÜTPHEN, in Holland, XXI. 1011. ZVORNICK, town in Turkey, XXI. 1011. ZWEIBRUCKEN, XXI. 1012. See Deux Ponts. ZWICKAU, town in Saxony, XXI. 1012. Zwieselite, mineral, XV. 101. ZWINGLI (Ulrich), XXI. 1012; XIII. 726—Luther's controversy with, 736—confer-	ence between Luther and, ib.; XVIII. 822—his share in effecting the Reformation, 821 <i>et seq.</i> ZWOLLE, town in Holland, XXI. 1012. Zygadite, mineral, XV. 72. Zygæna, genus of fishes, XII. 325—fossil, 341. —— genus of insects, IX. 210.	Zygænidæ, family of insects, IX. 210. Zygænidæ, family of fishes, XII. 325. Zygobates, genus of fossil fishes, XII. 342; XVII. 719. Zygophyllaceæ, nat. order of plants, V. 188. Zygops, genus of insects, IX. 140. Zygosaurus, fossil reptile, XVII. 139.

THE END.

ENCYCLOPÆDIA BRITANNICA.

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THE
ENCYCLOPÆDIA BRITANNICA

OR
DICTIONARY

OF
ARTS SCIENCES AND GENERAL LITERATURE.

EIGHTH EDITION.

WITH EXTENSIVE IMPROVEMENTS AND ADDITIONS;
AND NUMEROUS ENGRAVINGS.

VOLUME I.

ADAM AND CHARLES BLACK, EDINBURGH.

MDCCCLX.

[The Proprietors of this Work give notice that they reserve the right of Translating it.]

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ADAM AND CHARLES BLACK, EDINBURGH

NEILL AND CO., PRINTERS, EDINBURGH.

[The Paper used in this Edition was the same as that of the former Editions.]

P R E F A C E.

It is now ninety years since the first appearance of the *ENCYCLOPÆDIA BRITANNICA*. During that period it has exhibited great and various changes. Consisting at first of three quarto volumes of moderate size, it now appears in twenty-one; each in quantity of matter equalling more than two of the original edition. Its internal changes have been still more remarkable. As it advanced, the whole circle of human knowledge came to be included within its ample limits. Showing, in its earlier stages, little literary skill above the level of respectable abridgment or compilation, it now includes treatises which may justly vie with the most finished productions of the age. The workmanship, at first, of a few among the least distinguished literary denizens of its native city, its list of contributors now embraces a large portion of that learned host by whom the sovereignty of literature is upheld. Thus, from being viewed as only a convenient digest of information, suited chiefly to the wants of the unlearned, it must now be considered as a large and well furnished repository of every variety of useful knowledge.

The *Encyclopædia Britannica* has always differed materially, in its arrangement and object, from most works of the same class. It may therefore not be improper briefly to notice the rise and progress of this description of publications, and the principal improvements that were made on this work, before we give any account of the plan and progress of the *EIGHTH* edition, or of its superior claims to the patronage of the public.

This class of publications belongs entirely to the modern world; for though the Ancients had the term, they had no compilations resembling those to which the Moderns have applied it. The *Natural History* of Pliny has sometimes been styled an Encyclopædia; and he has himself said that it embraces all that the Greeks designated by the term. But this can only have reference to the compass and variety of its matter, not to arrangement or method; in which it has nothing in common with those collective digests which appeared in modern Europe during the sixteenth and seventeenth centuries. If there were any anterior compilations of a similar nature, we need not look for them among the remains of Grecian or Roman literature, but among those of the learned Arabians of the middle ages. One such work, at least, exists in the collection of Arabic manuscripts preserved in the library of the Escorial. It is described in Casiri's account of them, as a work, "Ubi scientiarum, artiumque liberalium, synopsis occurrit, unâ cum accurata et perspicua earum notitia, definitione, divisione, methodo;"* and is said to have been compiled by Alfarabius, the great ornament of the School of Bagdad in the tenth century, who gave it the title of Encyclopædia.

The most noted and valuable of the early Encyclopædias was that of John Henry Alstedius, a Professor of Philosophy and Divinity at Weissembourg in Transylvania, and who is said to have been the author of about sixty other works, though he died at the age of fifty, in 1638.† His Encyclopædia, by which alone his name is remembered, appeared in 1630, in two folio volumes. A smaller and less comprehensive work of the same kind, which he published ten years before, served as the groundwork of this more extensive undertaking; in which he professedly aimed at the formation of a complete Encyclopædia.‡ It consists of thirty-five books, of which the first four con-

* Casiri, *Biblioth. Arabico.—Hispana Escorial*, i. p. 189.

† Niceron, *Mémoires des Hommes illustres*, t. xli. p. 300.

‡ The idea then entertained of the nature of such a work will be seen from his definition:—"Encyclopædia est systema omnium systematum, quibus res, homine dignæ, methodo certâ explicantur." Alsted. *Encyclop.* t. i. p. 49.

tain an explanation of the nature of the various subjects discussed in the rest. Then follow successively, six on Philology; ten on Speculative, and four on Practical Philosophy; three on Theology, Jurisprudence, and Medicine; three on the Mechanical Arts; and five on History, Chronology, and Miscellaneous topics. This work was held in high estimation till the close of the century in which it appeared. Leibnitz mentions it, in the early part of the next, in respectful terms; expressing, at the same time, an earnest wish that some of the learned would either join in remodelling and improving it, or in composing an entirely new work of the same kind.* The observations of this great philosopher show that he had reflected much on the objects of such an undertaking, and that he considered an Encyclopædia as a species of publication calculated to be eminently useful.

After what has been said, it is scarcely necessary to observe, that, though the term Encyclopædia be now familiarized to us as an appellative for *alphabetical* digests of general knowledge, the first works so designated were not constructed with any reference to the alphabet. It was long before the idea occurred that the lexicographic plan might be used as the basis of an universal repertory of human learning; and still longer, before the alphabet was employed to introduce general treatises similar to those of the early Encyclopædias. Nearly a century elapsed from the publication of the popular work of Alstedius, before any considerable attempt was made to present the world with an encyclopedical dictionary; and for a long period thereafter, no dictionary of that description—none, in fact, till the appearance of the Encyclopædia Britannica—was enriched with complete or systematic views of the Sciences.

Dictionaries limited to the explanation of technical terms, and particular sciences, had been long common throughout Europe; but the first professed attempt to bring the whole body of science and art into the lexicographic form, was made in the *Lexicon Technicum* of Dr Harris. It was completed and

* Leibnitii Opera, t. v. p. 405.

published at London in the year 1710;* and is generally viewed as the first great step in the advance to the more modern Encyclopædia. But, though professing to be universal, it was in fact limited almost entirely to mathematical and physical science; with respect to which, however, it has been generally allowed to have come fully up to the acquisitions of its day.

The *Cyclopædia* of Ephraim Chambers, published in 1728, presents the next marked advance in the composition of encyclopedical dictionaries; and may, indeed, be considered as constituting an æra in the history of their formation. Till its appearance there had been no attempt to explain the sciences in the order of the alphabet, and at the same time to conjoin their component parts dissevered by that mode of arrangement. “No one,” says this author, “seems to have perceived that a dictionary is in some measure capable of the advantages of a *continued discourse*; and, therefore, we see nothing like a *whole* in what has, in this sort, been done.” It was not, however, by comprehensive views of the established divisions of knowledge, introduced in the alphabetical order of their names, that he proposed to remedy the evil of fractured “wholes,” of which he complains. He sought to accomplish this by references from general to particular heads, and from the latter to the former,—in short, from the parts of all connected subjects or topics, reciprocally, conformably to an illustrative scheme with which he furnished his readers. That something was thus done to indicate and conjoin the subordinate parts of a science, fortuitously scattered under the different heads of the alphabet, needs not be questioned; but the inherent defects of the plan were incapable of being surmounted by any system of references, however complete. The sciences cannot be taught or understood without being viewed continuously, in their natural state of unity and coherence; and the great and primary objects of an Encyclopædia cannot be attained, where that method of surveying them is not adopted. In other respects, too, Chambers’s

* In two folio volumes—the first in 1706, the other in 1710. It passed through five editions in the course of the next thirty years.

notions of what was required by the nature of his undertaking were confined and arbitrary; as in thinking that an Encyclopædia should only contain the conclusions, without any of the demonstrations of mathematical, or the experimental details of physical science. But, with all its defects, whether of plan or execution, his work must be allowed to be the production of a mind of no ordinary compass and vigour, as well as one of the most useful literary undertakings ever accomplished by a single hand. It did much through its numerous editions,* and the other works of the same kind to which it gave rise throughout Europe, to stimulate the curiosity, to enlarge the knowledge, and to diversify the intellectual pleasures and pursuits of the mass of mankind.

The popularity of the *Cyclopædia* remained undisturbed by any rival for a considerable period; but the success with which it was frequently republished, and the progress of knowledge in some departments in which it was from the first defective, by holding out a prospect of encouragement to newer undertakings, led at last to a succession of similar works, mostly modelled upon its plan. The title which Chambers chose, in preference to the more classical one of *Encyclopædia*, was however laid aside for that suggested by their alphabetical structure; nor was the correct name assumed conjunctively with the latter, in any British work of this class, till the appearance of the *Encyclopædia Britannica*.

The first of the works now referred to, Barrow's *New and Universal Dictionary of Arts and Sciences*, consisting of a folio volume, was published in 1751; a supplement being added to it in 1754. Its only recommendations, as compared with its predecessor, consisted in an enlarged number of articles on mathematical subjects, on the mechanical arts, and on naval affairs; to make room for which church history and all scholastic topics were excluded. A garbled translation of D'Alembert's celebrated Preliminary Discourse to the French

* The *Cyclopædia* consisted of two very large folio volumes, of which there were *five* editions published in the short period of eighteen years.

Encyclopédie was prefixed, in two portions, to these two volumes, without the slightest notice being taken of the original.

This was followed, in 1754, by a *New and Complete Dictionary of Arts and Sciences*, comprised in four large octavo volumes, written, according to the title-page, "by a Society of Gentlemen." The general brevity of its articles enabled its compilers to widen its range in the departments of geography, commerce, and natural history. Prefixed to it there is a scheme of the divisions of human knowledge, intended to serve as the basis of its articles and references, and which is announced as "more simple and natural, and likewise fuller and better distributed," than that of either Chambers or D'Alembert. It may, however, be fairly characterised as an exceedingly confused and illogical performance, exemplifying an arbitrary use of philosophical terms.

In 1766 was published, in three folio volumes, *The Complete Dictionary of Arts and Sciences*, compiled under the joint direction of the Rev. Henry Croker, Dr Thomas Williams, and Mr Samuel Clerk; the theological, philosophical, and critical departments being superintended by the first; those of anatomy, medicine, and chemistry, by the second; and the mathematical by the last. This division of labour does not appear to have contributed much to the excellence of the work, it being, with few exceptions, a sordid compilation. In point of method it has still less claim to praise. Its authors either did not perceive, or disregarded, the use of that chain of references by which Chambers endeavoured to remedy the defects arising from the division of naturally connected subjects under a multiplicity of separate heads. Part of D'Alembert's Discourse was here also appropriated without any mention of its paternity.

On the Continent, as well as in England, the *Cyclopædia* of Chambers gave a new impulse to the desire for such publications. Within little more than twenty years from its first appearance, it had been translated into the Italian language; and became, in France, the foundation of the *Encyclopédie*,—the most extensive and celebrated undertaking of the kind that had yet

appeared. This great work, originally intended to consist of ten, was ultimately enlarged to seventeen folio volumes, of which the first was published in 1751, the last in 1765.* It is well known to those conversant with its history, that it was founded upon an unpublished French translation of the work of Chambers. That translation was undertaken in 1743, and completed in 1745, by an Englishman of the name of Mills, assisted by a native of Dantzic, named Sellius.† It is not, perhaps, so generally known, that the Abbe de Gua was the projector of the *Encyclopédie*, and that it was only in consequence of a dispute between him and the publishers that the editorship was committed to D'Alembert and Diderot.‡

Seeking no distinction, therefore, from novelty of method, they rested its claims to public favour upon the great extension of its several departments; upon the various attainments and literary eminence of its contributors; and, above all, on the philosophical spirit which animated their labours. It would be altogether foreign from our purpose to enter into any details concerning its philosophical or literary merits; or the irreligious and revolutionary designs with which its conductors were charged. But with respect to its completeness and consistency as a general repertory of knowledge, it may be observed that the popular branches of biography and history were excluded from its plan; and that, though it unquestionably contains many articles of great originality, depth, and ability, there is yet everywhere a large alloy of useless matter, dressed out in a vague, diffuse, and declamatory style.

* Besides seventeen volumes of text, it has eleven of plates and descriptions, of which the first was published in 1762, the last in 1772.

† *Mémoire pour P. J. F. Luneau De Boisjermain, Souscripteur de l'Encyclopédie.* 4to. Paris, 1771.

‡ *Nouv. Mem. de l'Académie Royale des Sciences de Berlin*, pour l'an. 1770, p. 52. *Biographie Universelle*, t. xviii. art. "Gua de Malves." While both concur in bestowing the highest encomiums upon the encyclopedical method—or plan of references—which Chambers had exemplified, they represent his execution as that of a servile compiler, particularly from French writers; observing, that the design of publishing the translation of his work was abandoned because it was discovered that the public would thereby get little of which it was not already possessed in another form. They, at the same time, make the curious acknowledgment, that without the aids derived from that translation, it would have been next to impossible to procure the co-operation necessary to the composition of the *Encyclopédie*. "Il n'y a presque aucun de nos Collègues, qu'on eût déterminé à travailler, si on lui eût proposé de composer à neuf toute sa partie; tous auroient été effrayés, et l'*Encyclopédie* ne se feroit point faite." *Encyclopédie*, art. "Encyclop." tom. v. p. 645.

To its tendency to promote similar undertakings in the higher walks of literature, may probably be ascribed Goldsmith's proposal to publish "A Universal Dictionary of Arts and Sciences," with the promised assistance of the most distinguished British writers of that day; who, as Bishop Percy informs us, "were to contribute articles, each on the subject in which he excelled."* The plan was frustrated by his untimely death; and it is matter of regret that his "Prospectus," described by Percy as "giving a luminous view of his design," has not hitherto reached the public.

The Encyclopædia Britannica made its first appearance a few years after the completion of its great French precursor, then at the height of its fame. The first edition, which was completed in the year 1771, though, as already observed, far from imposing or attractive either in respect of extent or execution, was yet distinguished by a more philosophical plan than had been adopted by any of its predecessors, either abroad or at home. Instead of attempting to elucidate the sciences by a number of separate articles corresponding to their technical titles or sections, introduced in the order prescribed by the alphabet—and with no continuity of explanation other than could be obtained through references from one head to another—it treated each science completely, in a systematic form, under its proper denomination; the technical terms and subordinate heads being also explained alphabetically, when anything more than a reference to the general treatise was required. This excellent method has been prosecuted upon a wider scale, and with more regularity of execution, in the subsequent editions; and though not always followed out with perfect order and consistency—for that could hardly be supposed possible in a work composed by so many different hands—it has nevertheless been practised to an extent that constitutes a great and beneficial improvement in the structure of Encyclopædias. Provision was thus made for the intermixture of general treatises, upon all subjects requiring continuous discussion, with a full statement of their subordinate heads or divisions. The objects aimed at in the early Encyclopædias were, in this way, reconciled to the lexico-

* Life of Goldsmith, prefixed to Bishop Percy's edition of his work, vol. i. p. 112.

graphic plan, whilst its adaptation to particular topics was in no respect impaired. It has, indeed, been alleged that this method has a tendency to withdraw the attention from the inferior to the greater articles; and that the nobler provinces on the map of knowledge may thus appear in high culture and order, whilst the lower and obscurer districts and localities are found to bear the marks of desertion or neglect. But this is not by any means a necessary or unavoidable result. And the plan which is best adapted to a satisfactory delineation of the higher subjects of inquiry, and which promises most effectually to communicate a knowledge of them, may be considered as being, on the whole, that which has made the nearest approach to perfection, and is most likely to be productive of beneficial effects.

The Editor of the first edition of this Encyclopædia, Mr William Smellie, was a man of considerable intellectual resources, and particularly conversant with Natural History. His biographer says "that the plan of the work was devised by him;"* and if this alludes to its method in respect to the sciences, he was more likely to have suggested that great improvement than any of his coadjutors. That method, it may however be observed, was not entirely new. It had been partially exemplified many years before in Dr De Coetlogon's voluminous, but long forgotten "Illustrations of the Arts and Sciences," published in 1745. In that work, each art and science was fully discussed in a separate treatise, introduced alphabetically under its name; thus exemplifying the distinguishing feature of the method in question. But whether it was suggested to Mr Smellie by that obscure publication does not appear.

The work, though bearing the title of *Encyclopædia*, was at first little more than a Dictionary of Arts and Sciences upon a greatly improved plan. But its second edition, completed in ten volumes, about twelve years after the first, was enriched by the addition of the great and popular branches—not treated in the same form in any preceding work of the kind—of Biography

* Kerr's *Life of Smellie*, vol. i. p. 136.

and History. In the French *Encyclopédie*, though occasional notices of memorable persons occur in the articles relative to the history of philosophy and science, there is no series of separate lives; and no place whatever is assigned to civil history. The supplement to that great work professed to include history in its plan; but its historical details being limited, for the most part, to what could be introduced under the names of kings and rulers, presented no substantive or connected views of nations and states. To include history, in any form, was considered by some critics, particularly by La Harpe, as an abuse of the purposes of an Encyclopædia. “L’histoire n’est point,” says he, “une acquisition de l’esprit; ce n’est pas dans une Encyclopédie qu’on doit la chercher.”* This is a manifestly arbitrary dictum, and would equally strike at many subjects of importance to the introduction of which La Harpe does not object. It derives no countenance either from the practice of the earlier encyclopædists, or the opinions of the most enlightened of those who have commented upon their labours. Thus we find a general summary of the history of the world in the Encyclopædia of Alstedius; and Leibnitz, in remarking upon the defects of that work, mentions the historical department as one of those requiring to be greatly extended.†

Till the publication of its third edition, which was completed in eighteen volumes, in 1797, its method and the comprehensiveness of its plan constituted the chief recommendations of the Encyclopædia Britannica. In none of its departments had it as yet attracted any marked approbation. But in this edition it rose greatly above its former level, both in its practical and speculative departments.

This edition was soon followed by two supplementary volumes, in which Professor Robison supplied the contributions wanting to complete that series which he had commenced when the principal work was far advanced. Taken

* La Harpe, *Cours de Littérature*, t. xv. p. 74.

† Leibnitii *Opera*, t. v. p. 184

together, "they exhibited," according to the late Dr Thomas Young, "a more complete view of the modern improvements of Physical Science than had previously been in the possession of the British public."*

A fourth edition, augmented to twenty volumes, was completed in 1810, under the able superintendence of the late Dr James Miller.† Most part of the new treatises which he introduced belonged, as was to be expected from his predilections and attainments, to Chemistry and Natural History—sciences then undergoing such rapid changes, that they added but little of permanent value to the work. The case, however, was different with Professor Wallace's mathematical contributions, which not only elevated its scientific character, but imparted to it considerable lasting utility.‡ The general value of the edition would have been much enhanced could its Editor have availed himself of those articles which Professor Robison contributed to the preceding supplemental volumes; but this was prevented by a temporary separation of the property from that of the principal work; and the incorporation of the whole—or rather of all that it was judged proper to republish—with the general text, was only effected in the seventh edition.§

With the completion of the fourth edition the progress of improvement was for some time suspended. The next two editions were little more than reprints of the former, and, therefore, contributed nothing to vary or advance the character of the work. But this was compensated for by the addition of a Supplement in six volumes.

This Supplement was projected by the late Mr Constable, soon after the principal work and its appendages had been purchased by his enterprising

* See Dr Young's biographical account of Professor Robison in the present edition, vol. xix. p. 303.

† See the notice of his Life in the present edition.

‡ The following were the most valuable:—Algebra, Conic Sections, Fluxions, Geometry, Mensuration, Porisms, Series, Trigonometry.

§ The following are the articles of the series reprinted in the seventh edition:—Arch, Carpentry, Centre, Dynamics, Perspective, Philosophy, Physics, Pumps, Resistance of Fluids, River, Roof, Seamanship, Signals, Steam-Engine, Strength of Materials, Telescope, Trumpet, Waterworks.

house, then in the zenith of its prosperity. The first half-volume was prefaced by a discourse by Mr Dugald Stewart, being the first of those Preliminary Dissertations on the History of the Sciences, which, in their more complete state, have added so greatly to the value of the subsequent editions; and it was followed by a succession of treatises upon many of the most important branches of knowledge, written by men of the highest talents and reputation. Its fame was not confined to Britain, but extended to the Continent; and two of the most distinguished philosophers of France—M. Arago and M. Biot—were enrolled and took an active place amongst its scientific contributors. Its publication, which commenced in 1815, was completed in 1824.

Within a few years thereafter, the whole of these copyrights passed into the hands of the present proprietors: And this transfer of the property was soon followed by the announcement of preparations for the seventh edition, which was in every respect more perfect than any of the preceding editions.* In the Prospectus of their plan, the new proprietors stated, that “the work would be widened in its compass, amplified and improved in its contents, and raised in all respects to a level with the modes of thinking and spirit of the age.” And they believe it will be found that in most respects they fulfilled this rather comprehensive engagement.

The attention of the Editor was early directed to the completion of those Preliminary Dissertations on the History of the Sciences which had been published in the Supplement. They were intended to form two distinct Dissertations, each divided into Parts. The first was to contain the History of Metaphysical, Ethical, and Political Philosophy; the second, that of Mathematical and Physical Science. The one was undertaken by the late Dugald Stewart,—the other by his friend and colleague, the late Professor Playfair; and, incomplete as they were left at the death of these eminent men,

* The seventh edition began to be published in monthly parts in March 1830, and was finished in January 1842.

they yet, to a considerable extent, supplied a great *desideratum* in British literature. The idea of a continuous delineation of the progress of the human mind in the discovery of truth and the correction of error, as an Introduction to a work in which the sciences are examined in detail, was, for the first time, exemplified in the Discourse prefixed by D'Alembert to the French *Encyclopédie*; and nothing of the kind, of acknowledged merit, had, in any shape, been given to the world in our own language prior to these Dissertations. That Discourse, though grand in its outline, was at once too rapid and too compressed in its notices of those "great lights of the world, by whom the torch of science has been successively seized and transmitted," to impart to the student, or to fix in his recollection, any satisfactory views of their opinions and achievements. The Scottish Discourses were written upon a scale which enabled their authors to remedy that defect; and they accordingly present, in a style as eloquent as their subjects are dignified, instructive views of the advances and failures of human reason, and the progress of genuine science, combined with the justest estimates of those who have most affected that progress for good or for evil. Stewart had originally intended to trace the history of all the principal branches of philosophy connected with the knowledge of the Mind; but his plan was completed only in as far as regarded the fundamental or Metaphysical branch; the others—with the exception of some valuable observations occasionally introduced in the former, concerning the Ethical and Political notions of the sixteenth and early part of the seventeenth centuries—having been left untouched. Fortunately, however, the portion completed and published had received, before the death of the venerable author, a careful revision and some additions of moment from his own hand. The history of the Mathematical and Physical sciences, again, was, at Professor Playfair's death, brought down only to the period rendered memorable by the names of Newton and Leibnitz; thus leaving the discoveries of a century, eminently progressive in scientific knowledge, to be detailed by other hands. It was the wish of the Editor to procure such continuations as should complete the plan which the original masters had sketched out; and, in as far as concerns Mathematical and Physical science, this may be considered as having been in great measure accom-

plished by the animated and instructive sequel to Professor Playfair's treatise, written by the successor to his academical chair, the late Sir John Leslie. To these has now been added a Dissertation by James David Forbes, the distinguished Professor of Natural Philosophy in the University of Edinburgh, now Principal of the University of St Andrews, bringing down the history of modern scientific progress to the year 1850. These Dissertations form an appropriate vestibule to the work; and although they may not present a complete history of ethics and science, and though differences of execution may, no doubt, be perceived among them, it cannot be denied that they furnish admirable illustrations of the progress of most of their principal branches.

The editorial care of the seventh edition was placed in the hands of the late Mr Macvey Napier, who held the Chair of Conveyancing in the University of Edinburgh from 1825 until his death in 1847; and it is but due to the memory of that gentleman to say, that he discharged the duties of his trying position with zeal and success. He was assisted in the greater part of the work by Dr James Browne, a gentleman of talent and learning, who not only aided him in superintending the volumes as they passed through the press, but contributed numerous articles, conspicuous for their ingenuity and ability, on various subjects of literary and scientific interest.

In his account of the present [eighth] edition, the Editor is necessarily obliged to restrict himself to a brevity of statement which excludes the possibility of mentioning all the valuable treatises that have been transferred to it from the preceding editions and their Supplements.

It may be stated generally, that every article of value in any preceding edition has been reprinted in this,—in all cases with corrections, and frequently with considerable additions. Besides these, it has received so great an accession of original contributions, that nine-tenths of its contents may be said to be absolutely new. The eighth edition of the *Encyclopædia*

Britannica was begun at the close of 1852, and completed at the end of 1860. Encouraged by the success which had attended the previous issues of the work (upwards of thirty thousand copies of it having been sold from its commencement), the publishers were emboldened again to undertake a new issue of the work. From the rapid progress made by every branch of science and literature, and from the high estimation in which the work had hitherto been held, a presumption was afforded that, if judiciously edited, the book would secure a full share of public patronage. The editorial charge was entrusted to Dr Thomas Stewart Traill, Professor of Medical Jurisprudence in the University of Edinburgh. His acknowledged taste and eminence in most departments of learning and science, which the culture of a long life had greatly improved, pointed him out as being well qualified for the task. As long as his health was equal to the labour, the work had the advantage of his learning and ability, and his editorial care was happily continued till near its completion. From the beginning it was resolved that the revision and extension of the articles should be more thorough than had ever been attempted in any previous edition of the *Encyclopædia Britannica*. This was rendered necessary by the advancement of knowledge, as well as by the increased demand for works of this class by the diffusion of education throughout the country.

On taking a review of the entire field of knowledge to be gone over by the encyclopædist, and on carefully studying afresh all the methods, both of system and of detail, that have hitherto been proposed for such a work, it appeared that the arrangement hitherto followed in this *Encyclopædia* was, all things considered, decidedly the best. This method consisted of a judicious combination of the systematic and the particular. It has in few instances been attempted to exhibit any science or department of knowledge according to the analytical and merely technical headings occurring in the order of the alphabet: but it has, on the contrary, so far as was judged advisable, been attempted to treat each science completely and at once, in a systematic form, and under its own proper designation, referring for particulars to its subordinate heads. All, therefore, will be suited, whether they wish to acquire a systematic or scientific

view of any subject, or to obtain that precise information on special points that may satisfy the exigences of the moment.

In a work of such magnitude, and embodying all, or nearly all, the departments of science, art, and literature, it would be idle to attempt to specify and characterise the principal writers who have contributed to its pages, or to estimate their articles; and, supposing such attempt were made, it could not fail to be in many respects erroneous and defective as well as invidious. We, therefore, shall content ourselves with giving a list of the leading articles in the principal departments of the work, and of the authors by whom they have been contributed. The reader will have no difficulty, without any suggestion of ours, in appreciating the merits of each; and we believe that there are but few from which he will not derive sound information, expressed clearly and distinctly.

The subjoined list embraces the names of the greater number of the individuals most celebrated in scientific, literary and political history, who have adorned the annals of this country for a long series of years. They were all aware, when they contributed articles to this work, that their names would be given along with them, and the fair presumption is that they did their best to make them worthy of their celebrity. And we are pretty confident that those who look into the articles referred to will find that this presumption has been fully realized, and that, speaking generally, they are worthy alike of the authors and the subjects.

I. THEOLOGY AND ECCLESIASTICAL HISTORY.

<i>Subjects.</i>	<i>Authors.</i>
Rise, Progress, and Corruptions of Christianity,	} Dr Whately, Archbishop of Dublin.
Theology and Scripture,	
Luther, and the German Reformation,	Dr W. L. Alexander.
Jesuitism,	Chevalier Bunsen.
Gnosticism,	Isaac Taylor.
Mohammedanism,	Principal Tulloch.
	Rev. Mr Cazenove.

II. PHILOSOPHY PROPER, AND ITS HISTORY.

<i>Subjects.</i>	<i>Authors.</i>
The Preliminary Discourses, . . .	{ Dugald Stewart—Sir James Mackintosh —Dr Whewell.
Aristotle, Plato, and Socrates, . . .	Dr Hampden, Bishop of Hereford.
Metaphysics, . . .	Rev. Dr Mansel.
Moral Philosophy, . . .	Rev. Dr Alexander.
Logic and Rhetoric, . . .	Professor Spalding.
Beauty, . . .	Lord Jeffrey.
Pantheism and Scepticism, . . .	John Downes, A.M.

III. POLITICS AND SOCIAL PHILOSOPHY.

Collision, Combination, Corn Laws, Cot- tage System, Emigration, Exchange, In- terest, Manufactures, Money, Neutrality, Partnership, Political Economy, Precious Metals, Taxation, Wages, &c. . . .	{ J. R. M'Culloch, Foreign Associate of the Institute of France.
Colony, Economists, Law of Nations, and Liberty of the Press, . . .	{ James Mill.
Funding System, . . .	David Ricardo, M.P.
Population, . . .	Rev. T. R. Malthus.
Annuities, and Human Mortality, . . .	Joshua Milne.
Life Insurance, . . .	W. T. Thompson.
Balance of Power, . . .	Macvey Napier.
Ballot, Bankruptcy, Communism, Prison Discipline, &c., . . .	{ John Hill Burton.
Credit Mobilier, . . .	Walter Bagehot.
Police, Post-Office, Savings Banks, . . .	Edward Edwards.
Sanitary Science, . . .	Dr Letheby—Dr Lankester.

IV. PURE MATHEMATICS.

Algebra, Conic Sections, Fluxions, and Geometry, . . .	{ Professors Wallace and Kelland.
Mensuration, . . .	Professor Swan.
Probability, . . .	Thomas Galloway.
Trigonometry, . . .	Edward Sang.

V. NATURAL PHILOSOPHY.

<i>Subjects.</i>	<i>Authors.</i>
Astronomy,	{ Professors Playfair and Henderson, Thomas Galloway, Rev. Robert Main, Greenwich.
Telescope,	Sir J. F. W. Herschel, Bart.
Achromatic Glasses, Acoustics, and Aero- nautics,	{ Sir John Leslie.
Hydrodynamics, Electricity, Magnetism, Microscope, Optics, and Voltaic Elec- tricity,	{ Sir David Brewster.
Electric Telegraph,	Professor W. Thomson.
Light and Heat,	Professor Traill.
Mechanics,	Professor Macquorne Rankine.
Pneumatics,	Professor Robison.
Navigation,	Rev. Dr Joseph Woolley.
Tides,	Dr Thomas Young.

VI.—NATURAL HISTORY.

Animal Kingdom, Entomology, Fisheries, Helminthology, Ichthyology, Mammalia, Ornithology, and Reptilia,	{ James Wilson—Sir John Richardson.
Meteorology and Physical Geography,	Sir J. F. W. Herschel, Bart.
Mineralogy,	Professor Nicol.
Palæontology, Odontology, and Mollusca,	Professor Owen.
Geology,	J. B. Jukes.
Botany,	Professor J. H. Balfour.
Chemistry,	Professor Gregory.
Ethnology,	Dr R. G. Latham.

MEDICINE AND SURGERY.

Anatomy,	Dr Craigie.
Surgery,	Professor Miller.
Medicine,	Professor Laycock.
Somnambulism (Mesmerism, &c.),	Dr Allen Thomson.
Medical Jurisprudence,	Professor Traill.

MEDICINE AND SURGERY.—*Continued.*

<i>Subjects.</i>	<i>Authors.</i>
Poisons,	Professor Christison.
Chloroform,	Professor Simpson.
Physiology,	Professor J. H. Bennett.
Food,	Dr T. Lindley Kemp.

VII.—PHILOLOGY AND HISTORY.

Grammar,	Dr Doig—Professor Spalding.
Language,	Dr Young—Dr R. G. Latham.
Philology,	Rev. Dr Donaldson.
Hieroglyphics, Egyptian History, Numis- matics,	} R. S. Poole.
History,	Professor Masson.
Roman History,	Rev. Charles Merivale.
Nineveh,	A. H. Layard, M.P.
Chronology,	Thomas Galloway.
Archæology,	Professor Daniel Wilson.

VIII.—BIOGRAPHY.

Atterbury, Bunyan, Goldsmith, Samuel Johnson, William Pitt,	} Lord Macaulay.*
Coleridge, Goethe, Pope, Schiller, and Shakespeare,	} Thomas de Quincey.
Addison, Bacon, Demosthenes,	Professor Spalding.
Brucker and Heyne,	Sir William Hamilton, Bart.
Dollond, Polonius, Porson, Wakefield, and numerous others,	} Dr Thomas Young.
Bishop Butler, Gassendi, Gibbon, Paley, Pascal, Voltaire, &c., &c.,	} Professor Henry Rogers.
Erasmus, Knox, Wycliffe, &c.,	Dr David Irving.
Falconer, Wordsworth, Wycherly, and many others,	} Robert Carruthers.

* It is but justice to the memory of Lord Macaulay to record the fact, that these invaluable contributions were generously presented as tokens of friendship to the senior proprietor.

BIOGRAPHY.—*Continued.*

<i>Subjects.</i>	<i>Authors.</i>
Franklin, Cromwell, and Mirabeau, . . .	Alexander Nicolson, A.M.
Homer, Æschylus, &c., . . .	Professor J. S. Blackie.
Haydn, Mozart, and other Musical Com- posers, . . .	} G. F. Graham.
Howard, . . .	W. Hepworth Dixon.
Hypatia and Iamblichus, . . .	Rev. Charles Kingsley.
Kant, . . .	Rev. Dr Cairns.
Milton, . . .	Professor Masson.
Newton, . . .	Sir David Brewster.
Niebuhr, . . .	Rev. Charles Merivale.
Oken, . . .	Professor Owen.
Orfila, . . .	Professor Christison.
Sir Robert Peel, . . .	Professor Goldwin Smith.
Quesnây, Ricardo, and Adam Smith, . . .	J. R. M'Culloch.
Prescott, . . .	William Stirling, M.P.
Tacitus and Quintilian, &c., . . .	Rev. F. W. Farrar.
Turner, . . .	Walter Thornbury.
Washington, . . .	Hon. Edward Everett.
Wellington, . . .	Dr W. H. Russell.

IX.—GEOGRAPHY AND TOPOGRAPHY.

Africa, Guinea, Labrador, &c., . . .	Dr Peterman.
America, Troy, &c., . . .	Charles Maclaren.
Cape of Good Hope, Natal, &c. . .	Sir Benjamin Pine.
Great Britain and Ireland, . . .	{ Hugh Murray, Henry Senior, Dr Strang, James Caird, M.P., F. Car- rington, John Girdwood, &c.
London, . . .	H. G. Reid.
Australasia, . . .	Sir John Barrow—William Westgarth.
Chile, . . .	C. B. Black, Santiago.
Hindustan, &c., . . .	Edward Thornton—E. B. Eastwick, &c.
Himalaya, . . .	Dr Joseph Hooker.
Italy, . . .	Sir J. P. Lacaita.
Madagascar and Polynesia, . . .	Rev. William Ellis.
Norway, . . .	John Barrow.
Polar Regions, . . .	Sir John Richardson.

GEOGRAPHY AND TOPOGRAPHY.—*Continued.*

<i>Subjects.</i>	<i>Authors.</i>
Prussia,	Dr G. Von Bunsen.
Russia,	Henry J. Bishop.
Spain and Switzerland,	Dr Norton Shaw.
Syria, &c.,	Rev. J. L. Porter.
Sweden, Peru, &c.,	David Kay, F.R.G.S.
Tarshish, &c.,	Sir J. Emerson Tennent.
Turkey,	D. Sandison.
Syria and Tyre,	Rev. J. L. Porter.
United States of America,	Professor Eliot.
Mississippi, Missouri, Mobile, and Ohio,	Professor J. D. De Bow.
Mosquito Shore and Nicaragua,	E. G. Squier.
New York,	Freeman Hunt.

X. FINE ARTS.

Architecture,	Professor William Hosking.
Fine Arts,	William Hazlitt.
Music,	George Farquhar Graham.
Painting,	{ Benjamin R. Haydon—W. B. Johnston.
Poetry,	George Moir—Professor Aytoun.
Drama, Chivalry, Romance,	Sir Walter Scott, Bart.
Sculpture,	Professor Westmacott.
Heraldry,	Thomas W. King.
Knights and Knighthood, Theatres,	Dr Doran.

XI. USEFUL ARTS.

Agriculture and Irrigation,	John Wilson—James Caird, M.P.
Horticulture,	Dr Patrick Neill—Charles Mackintosh.
Planting,	J. C. Loudon.

MECHANICAL.

Bridges,	Dr Thomas Young.
Iron Bridges,	Robert Stephenson, M.P.

MECHANICAL.—*Continued.*

<i>Subjects.</i>	<i>Authors.</i>
Carpentry, Joinery, and Stone-masonry, .	{ Dr Thomas Young—Thomas Tredgold —Arthur Ashpitel.
Ship-building,	Andrew Murray.
Steam Navigation,	Robert Murray.
Seamanship	Captain Basil Hall—Admiral Ramsay.
Dyeing,	Professor Calvert.
Gas-Light and Pottery,	Charles Tomlinson.
Brewing and Distillation,	Dr Stark.
Wines and Wine-Making	Sir J. E. Tennent.
Printing and Typefoundry,	T. C. Hansard.
Clocks and Locks,	E. B. Denison, Q.C.
Gunnery, Cannon, &c.,	Major-General Portlock.
Photography,	Sir David Brewster.

MANUFACTURES.

Cotton,	Thomas Bazley, M.P.
Bricks and Tiles,	Samuel Holmes.
Glass,	W. Cooper—James Ballantine.
Iron, and Iron Manufacture,	Dr William Fairbairn.
Copper, and Copper Smelting,	James Napier.
Silk,	William Felkin.
Oils and Opium,	T. C. Archer.
Paper, and Paper Making,	Charles Cowan.
Rope, &c.	James Newlands.
Tea, Wool, &c.,	Edward Edwards.
Sugar, Tobacco, &c., &c., &c.,	Charles Tomlinson.

CIVIL AND MILITARY ENGINEERING.

Fortification and War,	{ Lieutenant-Colonel C. Hamilton Smith, Major-General Portlock.
Lighthouses, Harbours, Inland Navigation, &c.,	{ Messrs Alan, Thomas, and David Stevenson.
Breakwater and Dockyards,	Sir John Barrow—John Barrow.
Railways,	David K. Clark.
Mines and Mining,	J. R. Leifchild.
River,	Professor Robison.
Road-Making,	Thomas Young—Charles Tomlinson.

Nothing but the necessity of bringing this notice within a reasonable compass could have weighed with the writer in omitting to mention all the authors who have lent their aid in this great undertaking. But a full enumeration is rendered less necessary, as a complete list of contributors accompanies this Preface. This list is arranged in the alphabetical order of the initials of the surnames—for example, J. S. B. will be found under Blackie, John Stuart. To render the literary history of the work as complete as possible, the Editor has also annexed Signatures to articles of eminence written for previous editions, wherever he was able to do so upon authoritative grounds. He is sorry to add, that in some copies, signatures, both to new articles and to some of the reprints, have been accidentally omitted; and that, in a few instances, they have been so misapplied as to give to one author what was written by another. The mistakes that might arise from these defects and inaccuracies will be partly obviated by the statements in this Preface; and the Editor ventures to hope that such errors as may still remain uncorrected, in the handicraft details of a work so extensive, will be acknowledged as almost unavoidable, even by those whom they may personally affect.

It would be ungracious to conclude this Preface without acknowledging the valuable services of the literary gentlemen to whom this edition is indebted, under the superintendence of the Editor, for the greater part of the articles without signatures, which are either original or revisions of former contributions. Of these, Mr Thomas Stewart Traill, the amiable son of the Editor, after four years of assiduous and much-prized services, was removed by death in early manhood. The others who may be mentioned, as comprising the regular staff of the Encyclopædia, were—John Downes, A.M.; David Kay, F.R.G.S.; Alexander Nicolson, A.M., Advocate; James Carmichael, Classical Master, Edinburgh Academy; Rev. Richard Waterston, A.B.; Rev. Peter Macpherson; David Pryde, A.M.; James S. Candlish, A.M. These have all, according to their opportunity, given their aid, in many important ways, to the furtherance of the work.

A few omissions in the text, for which the editor alone is to blame, were discovered too late to be remedied. And errors of various kinds may, no doubt, be also perceived, or may in time become obvious. It is not, in fact, possible to recollect and provide for everything that ought to be found in so multifarious a publication; and such blemishes as cannot fairly be ascribed either to remissness or indifference, the candid inquirer will readily excuse.

The predominance of Woodcuts over Engravings was rendered essential both from the desire of the writers, and from the demands of the public to have the text fully illustrated; and in this they have been used much more abundantly than in any previous edition. Both in number and in execution these representations speak sufficiently for themselves.

The eighth edition of the *Encyclopædia Britannica* is the largest literary enterprise ever undertaken by any single house in Great Britain, involving an expense which, but for the liberal patronage of the public, would have been almost appalling. The Editor has to acknowledge that his efforts have been warmly seconded by the proprietors, who have grudged no outlay in order to render this great work as perfect as possible in every department.

This outline may be fitly closed by the mention of a distinguishing part of this and of the previous edition, and which, indeed, is altogether new in British *Encyclopædias*,—that is, an extensive General Index. Other portions of the work may be more extolled; yet this undeniably lays claim to a degree of utility, which must be more or less appreciated by every class of inquirers—as furnishing a key, not merely to this or that particular science or subject, but to everything included within the vast circuit of these volumes. It is indeed obvious, that if an *Encyclopædia* has in any tolerable degree realized its objects, an index to it must necessarily be a highly useful compilation; and it certainly, at first view, appears somewhat remarkable, that no such appendage to any work of this description should have appeared in this country previously to the publication of the last edition

of the Britannica. It was thought, perhaps, that an Encyclopædia is itself a species of Index, and that the contents of each article are sufficiently disclosed by its title. But this is a mistake. Information upon particular topics may be, and often is, scattered under a number of different heads, or may lurk in corners where it might not be expected, or be readily found without its being pointed out—and hence an Index is indispensable to perfect an Encyclopædia. Much, however, of its value depends on the skill and care with which it has been compiled; and, in this case, these qualities have been united with a degree of intelligence and zeal seldom exemplified in a performance wholly unattended with literary distinction. The Index to the last edition was compiled by Mr Robert Cox, W.S.; and that now laid before the reader is the work of the Rev. James Duncan of Denholm, who will be thanked by all who avail themselves of the ready access he has thus afforded to the treasures of this multifarious Repository.

EDINBURGH, *January* 1861.

of the human mind. It was thought proper that an introductory chapter should be placed at the beginning of the work, and that the reader should be made acquainted with the nature and extent of the subject, and the manner in which it is treated. The first chapter is devoted to a general view of the human mind, and the second to a more particular view of the faculties of the mind. The third chapter is devoted to a description of the various kinds of knowledge, and the fourth to a description of the various kinds of reasoning. The fifth chapter is devoted to a description of the various kinds of judgment, and the sixth to a description of the various kinds of action. The seventh chapter is devoted to a description of the various kinds of passion, and the eighth to a description of the various kinds of habit. The ninth chapter is devoted to a description of the various kinds of virtue, and the tenth to a description of the various kinds of vice. The eleventh chapter is devoted to a description of the various kinds of happiness, and the twelfth to a description of the various kinds of misery. The thirteenth chapter is devoted to a description of the various kinds of health, and the fourteenth to a description of the various kinds of disease. The fifteenth chapter is devoted to a description of the various kinds of strength, and the sixteenth to a description of the various kinds of weakness. The seventeenth chapter is devoted to a description of the various kinds of courage, and the eighteenth to a description of the various kinds of cowardice. The nineteenth chapter is devoted to a description of the various kinds of generosity, and the twentieth to a description of the various kinds of selfishness. The twenty-first chapter is devoted to a description of the various kinds of honesty, and the twenty-second to a description of the various kinds of dishonesty. The twenty-third chapter is devoted to a description of the various kinds of justice, and the twenty-fourth to a description of the various kinds of injustice. The twenty-fifth chapter is devoted to a description of the various kinds of temperance, and the twenty-sixth to a description of the various kinds of intemperance. The twenty-seventh chapter is devoted to a description of the various kinds of chastity, and the twenty-eighth to a description of the various kinds of impurity. The twenty-ninth chapter is devoted to a description of the various kinds of modesty, and the thirtieth to a description of the various kinds of immodesty. The thirty-first chapter is devoted to a description of the various kinds of civility, and the thirty-second to a description of the various kinds of incivility. The thirty-third chapter is devoted to a description of the various kinds of politeness, and the thirty-fourth to a description of the various kinds of impoliteness. The thirty-fifth chapter is devoted to a description of the various kinds of cleanliness, and the thirty-sixth to a description of the various kinds of uncleanness. The thirty-seventh chapter is devoted to a description of the various kinds of order, and the thirty-eighth to a description of the various kinds of disorder. The thirty-ninth chapter is devoted to a description of the various kinds of industry, and the fortieth to a description of the various kinds of idleness. The forty-first chapter is devoted to a description of the various kinds of diligence, and the forty-second to a description of the various kinds of negligence. The forty-third chapter is devoted to a description of the various kinds of perseverance, and the forty-fourth to a description of the various kinds of desistance. The forty-fifth chapter is devoted to a description of the various kinds of resolution, and the forty-sixth to a description of the various kinds of irresolution. The forty-seventh chapter is devoted to a description of the various kinds of firmness, and the forty-eighth to a description of the various kinds of weakness. The forty-ninth chapter is devoted to a description of the various kinds of constancy, and the fiftieth to a description of the various kinds of inconstancy. The fifty-first chapter is devoted to a description of the various kinds of steadiness, and the fifty-second to a description of the various kinds of fickleness. The fifty-third chapter is devoted to a description of the various kinds of uniformity, and the fifty-fourth to a description of the various kinds of variety. The fifty-fifth chapter is devoted to a description of the various kinds of simplicity, and the fifty-sixth to a description of the various kinds of complexity. The fifty-seventh chapter is devoted to a description of the various kinds of plainness, and the fifty-eighth to a description of the various kinds of ornament. The fifty-ninth chapter is devoted to a description of the various kinds of frugality, and the sixtieth to a description of the various kinds of extravagance. The sixty-first chapter is devoted to a description of the various kinds of economy, and the sixty-second to a description of the various kinds of waste. The sixty-third chapter is devoted to a description of the various kinds of industry, and the sixty-fourth to a description of the various kinds of idleness. The sixty-fifth chapter is devoted to a description of the various kinds of diligence, and the sixty-sixth to a description of the various kinds of negligence. The sixty-seventh chapter is devoted to a description of the various kinds of perseverance, and the sixty-eighth to a description of the various kinds of desistance. The sixty-ninth chapter is devoted to a description of the various kinds of resolution, and the seventieth to a description of the various kinds of irresolution. The seventy-first chapter is devoted to a description of the various kinds of firmness, and the seventy-second to a description of the various kinds of weakness. The seventy-third chapter is devoted to a description of the various kinds of constancy, and the seventy-fourth to a description of the various kinds of inconstancy. The seventy-fifth chapter is devoted to a description of the various kinds of steadiness, and the seventy-sixth to a description of the various kinds of fickleness. The seventy-seventh chapter is devoted to a description of the various kinds of uniformity, and the seventy-eighth to a description of the various kinds of variety. The seventy-ninth chapter is devoted to a description of the various kinds of simplicity, and the eightieth to a description of the various kinds of complexity. The eighty-first chapter is devoted to a description of the various kinds of plainness, and the eighty-second to a description of the various kinds of ornament. The eighty-third chapter is devoted to a description of the various kinds of frugality, and the eighty-fourth to a description of the various kinds of extravagance. The eighty-fifth chapter is devoted to a description of the various kinds of economy, and the eighty-sixth to a description of the various kinds of waste. The eighty-seventh chapter is devoted to a description of the various kinds of industry, and the eighty-eighth to a description of the various kinds of idleness. The eighty-ninth chapter is devoted to a description of the various kinds of diligence, and the ninetieth to a description of the various kinds of negligence. The ninety-first chapter is devoted to a description of the various kinds of perseverance, and the ninety-second to a description of the various kinds of desistance. The ninety-third chapter is devoted to a description of the various kinds of resolution, and the ninety-fourth to a description of the various kinds of irresolution. The ninety-fifth chapter is devoted to a description of the various kinds of firmness, and the ninety-sixth to a description of the various kinds of weakness. The ninety-seventh chapter is devoted to a description of the various kinds of constancy, and the ninety-eighth to a description of the various kinds of inconstancy. The ninety-ninth chapter is devoted to a description of the various kinds of steadiness, and the hundredth to a description of the various kinds of fickleness.

NOTICE.

The Article on WINE, Vol. XXI., was in type before the passing of the Act 23 and 24 Vict. c. 110, "*to consolidate the Duties of Customs*," which received the royal assent on the 28th August 1860. Hence the schedule of duties which appears at p. 891, being that which was embodied in the Commercial Treaty with France, ratified in the spring of the same year, differs somewhat from the rates as finally adjusted by Parliament. The following table exhibits the amounts as they came into force on the 1st January 1861:—

Wine containing less than the following rates of proof Spirit, verified by Sykes' Hydrometer.

From and after 1st January 1861.	18 Degrees.	26 Degrees.	40 Degrees.	45 Degrees.
Of or from Foreign Countries—	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Red, . . . (gallon)	0 1 0	0 1 9	0 2 5	0 2 11
White, . . . „	0 1 0	0 1 9	0 2 5	0 2 11
Lees, . . . „	0 1 0	0 1 9	0 2 5	0 2 11
The growth and produce of a British Possession—				
Red, . . . (gallon)	0 1 0	0 1 9	0 2 5	0 2 11
White, . . . „	0 1 0	0 1 9	0 2 5	0 2 11
Lees, . . . „	0 1 0	0 1 9	0 2 5	0 2 11
When imported in bottles, and containing less than 40 degrees of strength, to be charged 2s. 5d. per gallon.				

INDEX

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Initials.	Names.	Initials.	Names.
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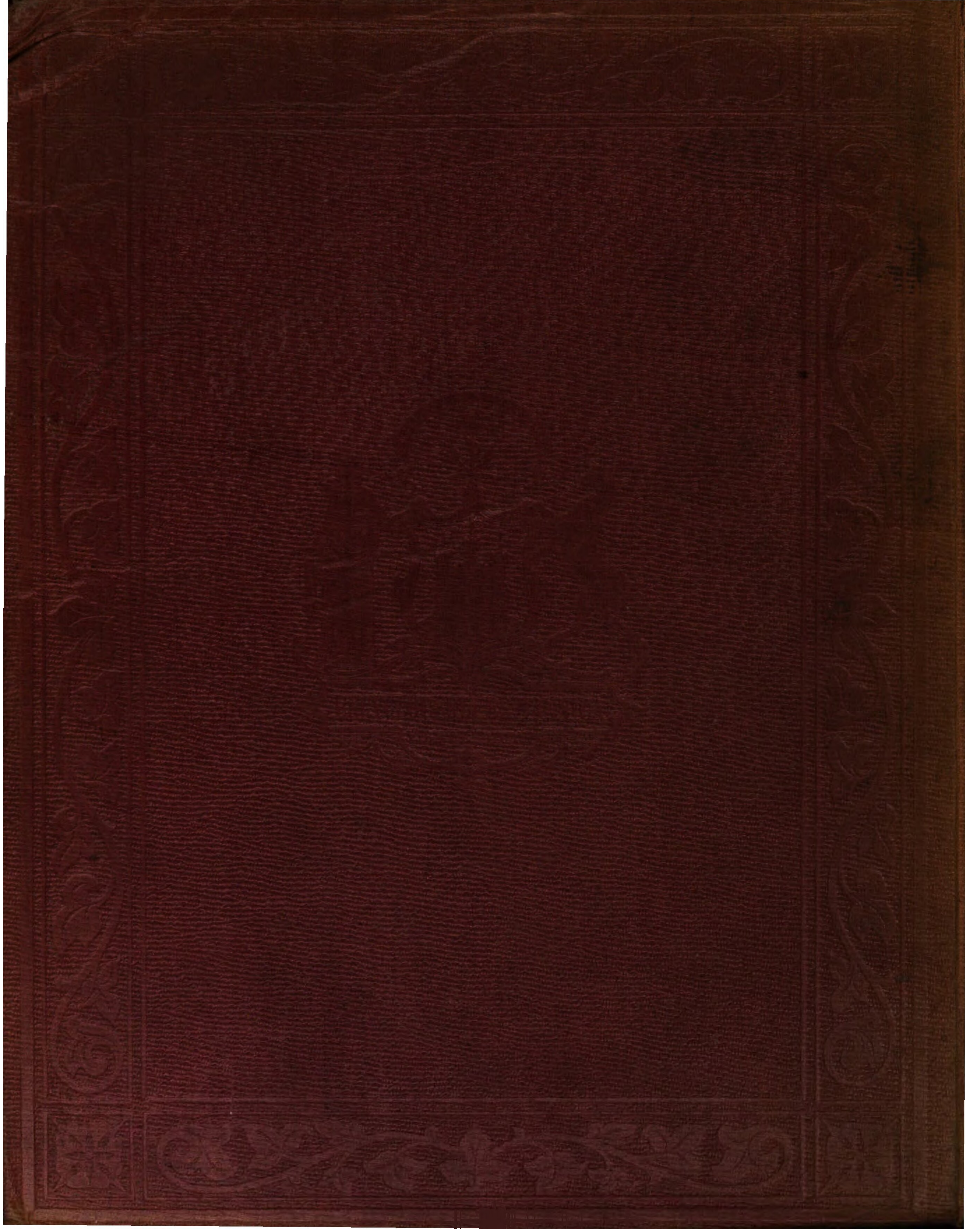
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